# Analysis of Social Roles and Impacts of Urban Ritual Events with Reference to Building Capacity to Cope with Disasters: Case Studies of Nepal and Japan

by

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# Chapter 1: Introduction

## 1.1 Background

As we enter the 21st century, a great deal of advancement in scientific knowledge has provided innovative approaches and methodologies to manage disaster related problems. Usually, disasters and big natural hazards challenge the capacity of societies and the government institutional mechanisms. Impacts of natural disasters are much higher in city areas where human population and economies are concentrated. Therefore, it is very important to find suitable mechanisms that help to reduce the vulnerability of communities and build on their capacities. In this context, Okada et al. (2007), Gopalakrishnan & Okada (2004), and Misra & Okada (2005) as well as many others mention about Integrated Disaster Risk management (IDRiM), and highlight the necessity of a multi disciplinary approach and procedures to credibly reduce the risks. The concept of IDRiM involves practitioners, policy makers, local community, government and non-government organizations (NGOs) acting together on their knowledge to develop sustainable and disaster resilient communities. Efforts towards building coping capacity of communities are gaining momentum with IDRiM.

Wisner et al. (2004) mention that increasing access to resources help people to enhance their coping capacity. Here, resources include various material and non-material assets required to secure livelihoods of people. In community based ritual management process diverse stakeholders come together, get engaged in lengthy communications and share their knowledge and skills while fulfilling the common ritual requirements. There is a transition of social life from normal static mode to a more dynamic mode. On ritual occasions, community networks and resources flow are activated and the entire ritual episode creates loads of tasks on various social sectors. Individuals, community groups and institutions are mobilized and kept alert to avoid unpleasant circumstances such as stampede and mishaps. Sufficient pre-planning is required for maintaining order during the tension mode of rituals. However, the coping ability of a community in disaster situation depends on how far it can sustain the preparatory measures or switch to tension mode from the normal daily mode of social life (Misra and Okada, 2005). It is important to understand the ritual process as a change in mode of social life and building capacity of community to cope with disaster risks.

In recent times, annual losses from natural hazards are staggering (Godschalk, 2002). Most of these losses are occurring at locations where vulnerable urban settlements are developed near known hazard areas, such as floodplains, earthquake fault zones, and hurricane prone shorelines. The tragedy in most disaster cases is the loss of scores of human lives due to lack of knowledge about soft measures of protection and timely action. It has been widely accepted by now that during earthquakes it is not the buildings that kill people but it is the people who kill themselves. It has been a challenge to design suitable risk communication strategy that keeps people socially aware about the damage and loss from natural disasters (Paton et al., 2006). The rarity of hazard phenomenon suggests that the risk reduction process should focus on integrating hazard education with community development and problem solving to deal with existing or contemporary problems (Paton and Johnston, 2001). Most of the conventional disaster drills and trainings are given for short duration without having profound impact on the participants. It is difficult to upkeep the knowledge / information that

people receive on their side and act on it (Paton and Johnston, 2001). Usually for low frequency high impact disasters, people often tend to neglect the disaster impact as they have never experienced it before and might never experience in the near future. To address this problem, it is necessary to develop a culture of disaster among community people. Mobilizing natural coping strategies rather than attempting to develop communication strategies to meet needs of all possible groups can be more conducive to sustain resilience over time (Paton and Johnston, 2001). The natural coping strategies can be used to elicit hazard perceptions, information and resource requirements necessary to adopt mitigation strategies, consistent with the beliefs, needs and goals of local people. It helps to regularly activate people and be aware about precautionary measures to cope with the disasters. In this study, rituals are conceptualized as natural coping strategies that can help to sustain preparedness and enhance the capacity of a community. It is important to focus on socio-cultural elements such as ritual in disaster risk reduction practices because there has not been much work on this topic. As built-in practices in a social life, rituals are the most viable social resources that can be easily implemented at community level to enhance the coping capacity of the local people.

## 1.2 Why are rituals important to develop capacity to cope with disaster risks?

Several studies highlight the importance of building capacity to cope with disaster risks which covers how people prepare for and respond to man man made or natural disasters (Lindell, Arlikatti and Prater, 2009; Arlikatti, Lindell and Prater, 2007; Lindell and Prater, 2002; Tierney, Lindell and Perry, 2000, 2001; Lindel and Whitney, 2000; Russel, Goltz and Bourque , 1995; Mileti and Fitzpatrick, 1993; Mileti and Darlington, 1995; Mulilis, Duval and Lippa, 1990; Mulilis and Lippa, 1990; Fishbein and Ajzen, 1975; Fischhoff, Slovic, Lichtenstein , Read and Combs, 1978; Lindell et al., 1997; Paton, 2000; and Paton and Johnston, 2001). The importance to develop community capacity was shown by several researches on social resilience which use socio-ecological approach (Adger, 2000; Adger et al., 2005; and Holing, 1973) or socio-psychological approach (Paton, 2003; Paton et al., 2008). These studies indicate how a social system and its infrastructure should develop its own internal capacities to cope with external disturbances.

Though community should develop its own disaster preparedness measures, many studies show that communities are reluctant to be proactive and do not remain alert to face a disaster situation. Particularly for low frequency high impact natural disasters it is difficult to keep up coping mechanisms in a community. For developing countries, people have day to day survivality concerns and coping with disaster is not in their priorities. This has led to recognition that people's interpretation of hazard events, personal beliefs, the social context about risk and its mitigation measures are all interrelated and influence the behavior of people to remain prepared. Disaster risk reduction practices that are woven in the livelihood of people and are part of the socio-cultural life can be the most viable means to activate a community to cope with future uncertainities. For this reason, rituals which are built-in the way of life of people are taken for this study as social actions that can build capacity of communities to cope with disaster risks. Much similar to social resilience approach (Paton, 2000), this study emphasizes the importance of the social context in disaster risk reductions

and further advocates the need of understanding local cultural practices such as rituals. Furthermore, this study will elucidate with reference to ritual practices in natural disaster prone urban communities in Nepal and Japan that to make communities more disaster resilient it is important to strengthen the local strategies and promote existing socio-cultural dynamics.

## 1.3 Research Problem

The main research challenge is to interpret socio-cultural practices such as rituals in terms of reducing disaster risks and identify the social impacts of these built-in practices to develop community resilience to disasters. Natural hazard prone urban communities from Nepal and Japan are taken as case study areas in this study.

Sociologists have described rituals either as a process to maintain the status quo of a social structure or as a symbolic act of social change (Durkheim, 1915; Turner, 1979 and Van Gennep, 1909). Rituals as maintaining the status quo focuses more on the static aspect that retains and strengthens the existing social order, while as an agent of social change it highlights the transition of social order from one phase to the other. The relationship between rituals and community capacity building to cope with social uncertainties such as disasters has not been explained so far by sociologists and anthropologists. This study conceptualizes rituals as latent measures that can help to strengthen the capacity of a community to cope with adversities that may occur in the near future. In order to prove this fact scientifically, this study adopts relevant theoretical models and data from field survey. Basically, it aims to answer the following major research questions; the first one focusing on the ritual process and the second one on the ritual outcome:

- In what ways can we explain the social roles of rituals in terms of building the capacity of communities to cope with disaster risks?

- What are the possible social impacts of rituals and how do they help to make communities resilient to disaster risks?

This research intends to address the need for proactive measures in a community which is under possible threat of natural disasters. A conceptual framework of structural ritualization theory (SRT) and social capital is employed in this research. SRT focuses on the following issues related to community capacity development;

- How can the process to build capacity of communities to cope with disaster risks be explained by using key features of SRT?

- How do the ritualized actions help to bring behavioral changes in the participants in terms of gaining capacity to cope with disaster risks?

The second focus of our research is social impacts of rituals with reference to development of social capital and addresses the following issues:

- How can the social capital development be analyzed in terms of impacts of rituals?

- To what extent do ritual outcomes such as social capital and trust contribute to the development of disaster resilient communities?

On this background, a detailed investigation of socio-cultural practices such as rituals is made in order to identify the inherent coping measures that can enhance the capacity of communities. It also mentions policy implications of rituals in the context of reducing disaster risks in communities. As socially viable actions, rituals highlight some key aspects of implementing community activites that can be relevant in community based disaster risk reductions.

## 1.4 Research Objectives

The main research objectives of this study are:

- To interpret ritual process in terms of enhancing the capacity of communities, indirectly leading to coping with disaster risks.

- To analyze statistically how ritual practices impact communities, help consolidate social capital and trust, thus contributing to the development of disaster resilience.

Table 1 below presents an outline of the objectives, together with proposed theoretical models and study implications to be derived.

Table 1: Outline of research objectives against theoretical models and implications

| S.N. | Research Objectives | **Theories / Models for the study** | Implications |
|---|---|---|---|
| 1 | Interpret ritual process | Structural Ritualization Theory | - Ritual as unique community participatory management building capacity to cope with disaster risk. |
| 2 | Analyze ritual outcome | - Social Capital Theory<br>- Yamgishi's theory on trust (1998, 2001) | - Social capital and trust developed through rituals for community disaster resilience. |

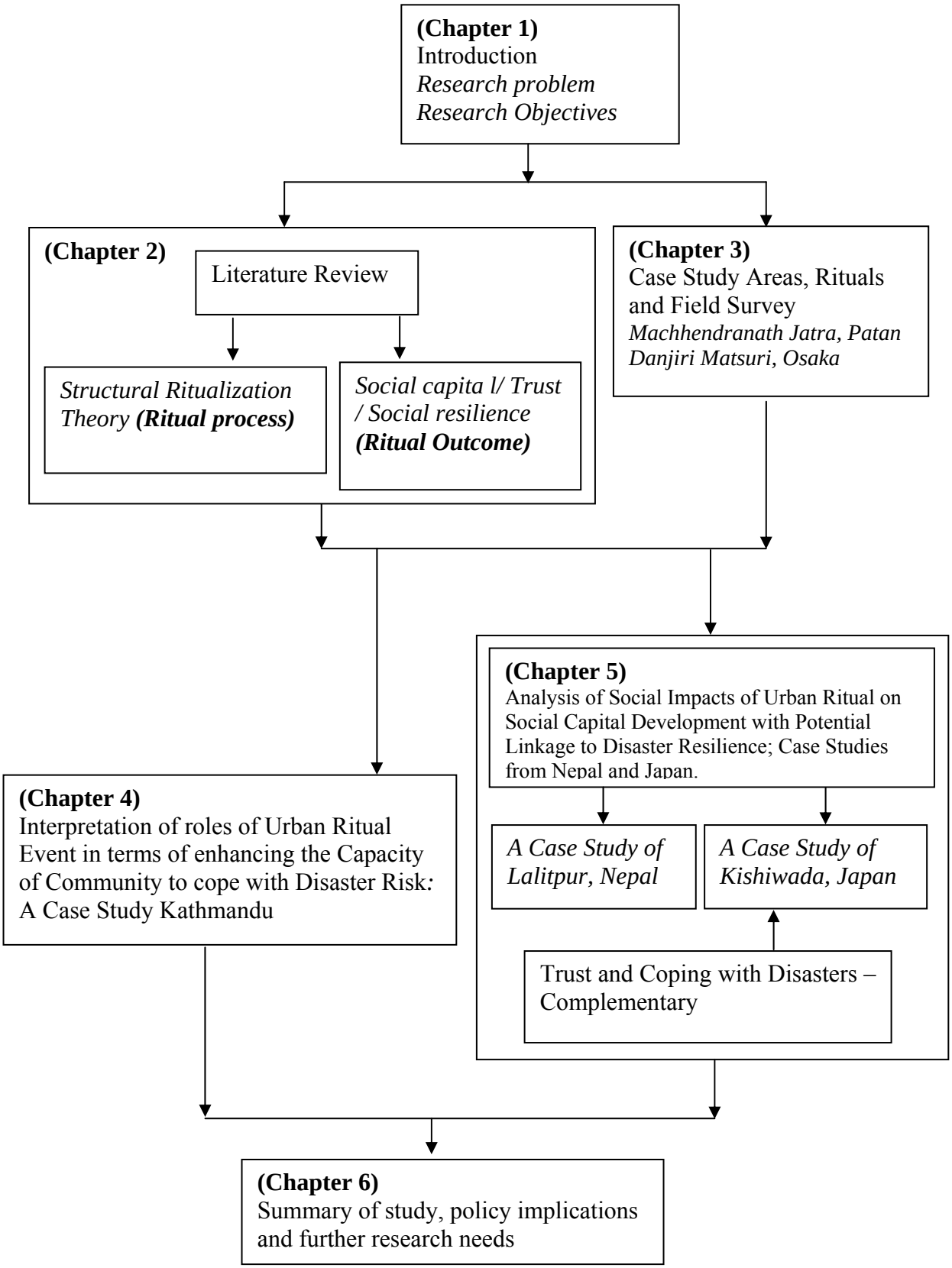


Figure 1: Research framework

## 1.5 Structure of Thesis

This thesis consists of six chapters as shown in Figure 1. Chapter one introduces the background of this research including the research problem, objectives and the organization of the thesis.

Chapter two concentrates on literature review including the definition of rituals and coping with disaster risks.The concepts of Structural Ritualization Theory (SRT), social capital, trust and disaster resilience are explained to understand the ritual process and its outcome.

Chapter three gives a brief explanation about rituals in the case study areas of Nepal and Japan. It includes a brief historical background, local beliefs and social significance of rituals namely; "*Machhendranath Rath Jatra*" in Lalitpur, Nepal and "*Danjiri Matsuri*" in Kishiwada, Osaka, Japan. This chapter ends with explanations about field survey method adopted in the study.

Chapter four emphasizes on interpretation of rituals using Structural Ritualization Theory (SRT) and discusses the role of ritualized symbolic practices (RSPs) in enhancing the capacity of communities to cope with disaster risks.

Chapter five gives an overview of social capital theory in order to analyze how rituals contribute to the development of social capital for disaster resilience in the communities of Nepal and Japan. It analyzes the relationship between ritual participation and development of trust. Also, it examines how respondents with different levels of general trust react to information about trustworthiness of others.

Chapter six summaries the major outcomes of the study, explains policy implications and refers to the need for further extensions of this research.

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# Chapter 2: Literature Review

This chapter aims to give an overview of rituals and the concept of coping with disaster risks. It introduces structural ritualization theory (SRT) focusing on how ritualized practices contribute in developing emotional intensity and solidarity among ritual participants. SRT has been employed in the context of understanding ritual process and interpretation of rituals in terms of enhancing the capacity to cope with disaster risks. Then, the theory of social capital and trust (Yamagishi, 2001) will be discussed and related to rituals. The significance of rituals in building disaster resilience is explained later in this study.

## 2.1 Definitions

### 2.1.1 Ritual

The definition of ritual involves ambiguities though much effort has been invested to find an answer about it. Durkheim (1915) argues that it is a social function which is used to maintain the status quo of a society while Turner (1979) suggests that it is a social process that makes social transformation possible. Also, there is no agreement on what events can be represented as rituals; must it be limited to sacred events as assumed in traditional anthropology or can it be applied to secular events as developed by many contemporary theorists. Number of mega events can be related to rituals such as ceremonials, wedding and commencements. At the same time, renowned sociologist Erving Goffman (1967) on his interaction ritual theory applied ritual to micro and everyday events such as shaking hands and waving good bye. Though empirical evidences are scarce to clarify the definition of ritual, many theorist use the concept of ritual to refer to formalized symbolic performance and its usefulness in understanding the world in which we live. Ritual helps in interpreting different aspects of social action.

Ritual has largely been discussed as either in the tradition of Durkheim (1915) or that of Turner (1979). Durkheim (1915) in his major work "The Elementary Forms of Religious Life" relates ritual to three themes; ritual has something to do with sacred, ritual contributes to the feeling of social solidarity and ritual works to maintain the social order. In the first theme, Durkheim (1915) claims that the world is divided into the sacred and the profane. The sacred realm consists of objects towards which we maintain an attitude of respect. This attitude is revealed in ritual performance; for instance, people keep an appropriate distance from high personage, they approach with precautions, and the gesture and language used when interacting is different from ordinary situation (Quantz, 1999). The second theme of Durkheim (1915) explains that participation in ritual helps create non rational feelings of connectedness to other individuals and the group as a whole and feelings of commitment to specific symbols rather than attempt to analyze rationally the possible referents of those symbols (Quantz, 1999). One not only becomes cognitively aware of identity, reality and morality but embodies all of these and become connected to symbolic world. Durkheim (1915) mentions that social solidarity can be strengthened through the embodiment potential of ritual. The third theme of Durkheim (1915) is related to a functionalist discourse and how ritual appears to work to maintain the status quo. Through the functionalist approach Durkheim (1915) explains that ritual guides members of a community in their social activities.

The potential social effect of ritual is strengthening solidarity. But, limitation of Durkheim's assumption is that the ability of ritual to build solidarity to create one dominant social order is also accompanied by social conflict. In the process of creating feeling of bonding, rituals also help create feeling of separateness from those who are excluded. In a complex society, different individuals occupy different social position and ritual is used as one aspect of social conflict (Quantz, 1999).

Unlike Durkheim (1915) who was drawn to ritual as a social mechanism that contributes in social cohesion, Turner (1979) has been drawn to ritual as a social mechanism with the potential to produce social transformation. Turner (1979) relates ritual to two themes; ritual is dynamic rather than static, and ritual provides the possibility of social transformation unlike the Durkheimian sense that ritual is a mechanism of social maintenance (Quantz, 1999). For Turner (1979), ritual is a key process in which a society struggles between forces of stability and change. Drawing his theoretical inspiration from Van Gennep`s (1909) *Rites de Passage*, he argues that rituals mark the movement of a person from one social status to another in particularly three stage form as separation, margin(limen) and aggregation (cit. by Quantz, 1999). For example, rites that mark a young boy's movement from childhood to adulthood include elements that mark his separation from childhood status and his aggregation into new adult status. In between these the individual has no status and this stage is liminality. There is no hierarchy or inequality located between two status of a firm social order and within such limen stage we find freedom, *communitas* and anti-structure. Quantz (1999) mentions that Turner's understanding of ritual accepts the idea that statuses are structures and *rites de passage* serves a particular function; and ritual as a process of anti-structure liberates participants from established social order before entering a new stable state with its own rights and obligations.

### 2.1.2 Concept of ritual for the study

From the literature survey it can be concluded that rituals are crucial to human behavior. The conventional understanding of rituals in sociology assumes that rituals are found only in pre-modern societies; are static, unchanging; and occurs only in religious or sacred context; and rituals are product of social processes with little effect for people (Knottnerus, 2009a). This study adopts the concept of ritual used by Knottnerus (1997, 2009a, 2009b) which is grounded in the basic assumption that daily life is characterized by several social and personal rituals. Everyday rituals, whether occurring in small groups or organizations lead to behavioral changes on group members while both being fed by and feeding into larger societal levels of interaction (Knottnerrus, 1997). This perspective incorporates ritual practices occurring in various social settings such as face to face interactions, small groups, organizations and society as a whole. Unlike the conventional concept of ritual, it assumes that rituals are found in both pre-modern and modern societies. They are dynamic and subjects to change. It has a profound significance in social life of people and can occur in both secular and sacred contexts.

Knottnerus (2009b) mentions that ritual provide a "missing link" in sociological thought by providing a common framework to study workings of a society, the social dynamics and complexity of human behavior.

### 2.1.3 Coping with Disaster Risk

There is a lack of a clear understanding of the term "coping capacity" because this concept has its roots in a number of disciplines. *UNISDR* (2009) defines coping capacity as the ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters. The capacity to cope requires continuing awareness, resources and good management, both in normal times as well as during crisis or adverse conditions. Blaikie, Cannon, Davis and Wisner (2003) explain that coping is the manner in which people act within the limits of existing resources and range of expectations to achieve various ends. They further add that coping points towards people's ability to help themselves individually and collectively. Brooks and Adger (2004) describe capacity development as the process of enhancing adaptive capacity which involves learning from previous experiences and applying these lessons to cope with future surprises. The capacity to cope with stress is related to the social capital of societies and the functioning of the community system rather than simply maintaining a stable state of its components (Adger, 2000; Dynes, 2005). The capacity of a system represents not only the set of resources available but also the ability of that system to use these resources effectively (Brooks and Adger, 2004). Twigg (1998) refers to coping strategy as the application of indigenous knowledge in the face of hazards and other threats, while Smit and Wandel (2006) describe coping capability as short term capacity, the ability to just survive, and employ adaptive capacity for longer term sustainable adjustments. Similarly, Davis (1996) uses the term coping strategy for various approaches people employ to deal successfully with a crisis.

It should be noted that people can adopt both structural and non structural measures to guard against natural disasters such as earthquakes and floods. Despite adopting advanced structural/organizational mechanisms, modern day disasters such as the 1995 Kobe earthquake in Japan have revealed that structural coping measures alone are not effective. For this reason, it is equally important to understand the social dynamics of communities and to identify the viable, non-structural options that contribute to the reduction of disaster risk.

We suggest that one important social factor that can reduce disaster risk involves rituals. Various scholars such as Durkheim (1915), Goffman (1967), Collins (2004) and Turner (1969) have studied rituals and have demonstrated that they can significantly influence social life. Collins for instance has developed a theory of interaction ritual chains. And Deflem (1991) in discussing Turner's (1969) theory about ritual and anti-structure emphasizes how rituals as regular human activities meet the recurring need to redress the limitations of social structure. Turner's concept of ritual as a form of catharsis, draining off hostility towards the status quo of a social system, is viewed as a medium which increases a group's capacity to cope with future crisis. It is assumed that rituals redress the limitations of social structure and enhance its capacity making it more efficient during response and recovery efforts in disasters.

Our survey of the disaster literature shows that various mechanisms (potentially related to ritual) can be employed to increase coping and adaptive capacities at the community level. In this study, the capacity to cope with disaster risk refers to a wide range of strategies and processes which have the aim of reducing the impact of disasters (Bhandari and Okada, 2009).

The following factors are particularly important for cultivating a community's capacity to cope with disaster risk:

- Building awareness about vulnerability and disaster risk
- Access to local knowledge and available skills
- Mobilization of existing human and non human resources
- Strengthening of social networks and support at both horizontal and vertical levels of a social system

Unfortunately a survey of the scholarly literature on ritual shows that almost no attention has been given to the role of ritual in disasters. However, Structural Ritualization Theory (SRT) has begun to address this issue (see Thornburg, Knottnerus, and Webb, 2007, 2008) and provides a framework for analyzing how rituals can contribute to people's capacity to cope with disaster risk.

First, SRT gives a comprehensive analysis of ritual events and its possible implication in disaster risk reductions. Mostly disaster risk reduction theories mention about capacity building, risk communication, awareness, coping and resilience (Rowan, 1995; Paton and Johnston, 2001; Smit and Wandel, 2006; Wisner et al., 2004). Rowan (1995) uses the CAUSE model to explain the risk communication strategy which involves earning trust or establishing Credibility; creating Awareness; deepening Understanding of complex material; gaining agreement on Solutions to problems, and moving from agreement on solutions to Enactment. It explains the process to bring behavioral changes particularly in the context of adopting health risk reduction measures. The risk communication process begins from gaining trust of the client and finally motivating them to take actions. The model is applied in interactions between a doctor and a patient. A scant application of this model is found in the case of natural disaster risk reductions. For instance, Matsuda & Okada (2006) introduced "community diagnosis", which is designed analogous to a liberal, sound relationship between medical doctors (corresponding to disaster and urban experts) and patients (corresponding to local citizens). It has been used as a tool to externalize tacit knowledge (including ideas, opinions and attitudes) about common space related social problems and incorporates them in the disaster mitigation plans. The CAUSE model needs more studies on its applications focusing on natural disaster risks.

The role of psychological, social and institutional variables in disaster risk reduction behavior among individuals has been explained by Paton and Johnston (2001) and Paton et al. (2008). In their social resilience model, the casual linkage between individual, community and institutional variables are explained by using Structural Equation Modeling. It helps to understand how intentions of disaster preparedness are dependent on socio-psychological factors. This model is an important contribution towards understanding the process of building resilience to natural disaster risks in a community. However, the model focuses primarily on socio-psychological factors and does not include the need of resources to adopt any protective actions. In the context of developing countries, access to resources is vital, particularly to cope with low frequency high impact disasters that are of little concern to people surrounded by daily livelihood problems. SRT model to some extent resembles social resilience model, however the explanatory power is further enhanced by incorporating issues

of sustaining the process of resilience building by repetition and mobilizing community resources in order to enhance the efficiency of built-in social system.

SRT uses conceptual operators such as salience, repetitiveness, homologousness and resources to explain the ritual process (Knottnerus, 2009a; 2009b). It provides a normative way to visualize the ritual process (Knottnerus, 1997). A convincing explanation can be built through the conceptual operators of SRT to understand the social implementation of rituals in a community. Ritual itself is an example of a socially implementable action where local people use their implicit knowledge and wisdom to carry out the practice. Local people use the most viable resources to perform rituals and repeat it annually to make their implicit knowledge more explicit. It offers them an opportunity to check the effectiveness of their implicit knowledge and make necessary modifications. Urban infrastructures such as open spaces, water supply lines and important public buildings are renewed and renovated through the ritualized actions. Social networks and interactions are activated and added during rituals. In the ritual process, community gains its resilience in terms of enhanced capacity of both its physical and social resources.

SRT also helps to understand the outcome of a ritual. It explains that collective events such as ceremonies and public gatherings focus on generating emotional intensity and group solidarity (Knottnerus, 2006). These outcomes are understood as the components of social capital in this study which is later related to disaster risk reductions. In this manner, SRT provides a powerful theoretical lens to analyze and understand the ritual process and outcome (Knottnerus, 1997; Knottnerus, 2006), both of which can contribute in building community resilience.

## 2.2 Structural Ritualization Theory

Structural ritualization is a theoretical framework (Knottnerus, 1997) that focuses on how rituals affect the social behavior of people in a group embedded within a larger social environment. Examples of embedded groups would include an informal youth group within a school system (Knottnerus and Poel-Knottnerus, 1999), a slave society within a plantation system (Knottnerus, 1999), or a problem-solving group within a bureaucratic organization (Knottnerus and Berry, 2002; Knottnerus and David, 2003). More generally, the theory examines the role symbolic rituals play in social life and the processes by which ritualization occurs and leads to the formation, reproduction, and alteration of social structures. While various studies emphasize the importance of rituals in social life of people, SRT differs from these because it provides a precise theoretical formulation about ritual dynamics with empirical research examining this phenomenon.

Knottnerus (1997) uses the concept of ritua1 not only to analyze ceremonial, religious, and sacred behaviors, but more broadly activities such as interaction sequences and social behaviors that occur in all kinds of contexts including secular settings. This approach focuses on ritualized symbolic practices (RSPs) which are defined as action repertoires that are schema driven. Action repertoires are socially standardized and repetitive activities grounded in cognitive frameworks. RSPs are social actions that possess meaning and express symbolic themes. Such practices are found throughout social life in many different settings such as

periodic family gatherings and celebrations, religious practices, musical performances and other recreational pursuits (Knottnerus, 2006).

### 2.2.1 Ritualized Symbolic Practice: RSP

Ritualized symbolic practices refer to the widespread form of social behavior in which people engage in regularized and repetitious actions when interacting with others. Such social behaviors are found throughout social life and can include ritualized styles of interaction within different organizational milieus, subcultures, secret societies, and informal or formal groups. This approach argues that habituated action repertoires which comprise much of the taken for granted daily lives of actors rest on cognitive schemas. While actors may not reflect upon and consciously attend to many of the routinized behaviors that constitute their everyday lives, ritualized practices still rest upon cognitive structures or symbolic frameworks (i.e., organizations of cognitive representations). Such symbolic structures articulate and express various thematic meanings (Knottnerus, 1997).

The analytical model focuses on several factors that influence the dominance of certain kinds of ritualized practices in a larger environment. Before defining these factors the scope conditions of the theory should be specified. All definitions and assumptions of the theory are relevant to these scope conditions designated through "domains of interaction." A "domain of interaction" is a bounded social arena which contains two or more actors (Knottnerus, 1997). These actors are at least part of the time engaged in face-to-face interaction. Further, a "domain of interaction" is a delimited sphere or region of social activity. This social arena has the power to produce effects, that is, it affects the probability of occurrences (Knottnerus, 1997). And, such occurrences involve actors' cognitions and behaviors.

Theoretically, this conceptualization also allows us to recognize that there may be single or multiple domains of interaction (i.e., social environments) which significantly influence the development of ritualized symbolic practices. For this reason, we can make critical distinctions between empirical settings such as organizations or institutions in which embedded groups maybe exposed to ritualized symbolic practices in different numbers of interaction domains for differing periods of time (Knottnerus, 1997).

While explaining SRT, Knottnerus (1997) mentions how a larger social milieu may influence the social dynamics of a group nested within a social environment. He adds when ritualized practices and symbolic patterns in a social environment are intensified and presented to the inhabitants of an embedded group they instill 'schema-driven action repertoires'. The greater the impact of these ritualized activities on people the more similar or isomorphic will be their immediate social world and the wider milieu within which they are located (Knottnerus, 1997). The theory argues that RSPs are influenced by four key factors in a larger social milieu which are; salience, repetitiveness, homologousness, and resources (Knottnerus, 1997; Knottnerus, 2009a; Knottnerus, 2009b).

### 2.2.2 Salience

Ritualized actions may contain certain symbolic schemas or models. The symbolic meanings in rituals are grounded in and expressed through the action or practice. Salience refers to the degree to which a ritualized symbolic practice within a domain of interaction is prominent, conspicuous, or noticeable. It is the degree to which a RSP is perceived to be central to an act, action sequence, or bundle of interrelated acts (Knottnerus, 1997). For instance, a ritualized activity such as saying "hello" or *"Namaste"* in Hindu culture (Nepal, India) would seem to have fairly low salience. Normally, it is a habitual behavior engaged in by actors which is not central to the dynamics of the interaction episode. It doesn't have a strong impact in the behaviors and relationships among interactants. In contrast to this, Knottnerus and Poel-Knottnerus (1999) mention about various behaviors engaged in by staff and students in nineteenth-century French male lycees (i.e., elite secondary school system) which exhibited a much higher salience. In these settings, staff (teachers and supervisors) always exercised strict discipline, interacted with youth in a stiff and authoritarian manner, expected pupils to defer to their commands and wishes, and never displayed any emotions or sympathetic concerns for students. Such formal, hierarchical, ritualized relations were quite prominent in all interactions. The rigid, authoritarian, hierarchical distinctions were quite conspicuous and highly visible to all actors in these practices within this institution. They created a unique ambience and guided nearly all aspects of the interplay between these two groups from the dynamics of the classroom to interpersonal relations in the dormitory and other nonacademic settings.

It is worth mentioning here about the idea of a "domain of interaction" and how to operationalize theoretically relevant elements of salience for the purposes of empirical investigation. For example, operational indicators of salience can be frequency of ritualized symbolic practices in a particular domain of interaction that measures the degrees of strength of different action sequences and their symbolic schemas (Knottnerus, 1997). Another operational yardstick for determining the centrality of symbolic practices within a clearly defined sphere of interaction can be the duration (i.e., temporal measurement) of various ritualized actions.

### 2.2.3 Repetitiveness

Repetitiveness represents relative frequency with which an RSP is performed. Ritualized symbolic practices can vary in the extent to which they are repeated. This range of occurrence could extend from a practice rarely being repeated to it being engaged in quite often in some particular social environment. The following scenario shows how repetitiveness of RSPs in schools create friendly or non friendly social environment. For instance, in certain schools, distinctive ritualized interactions between teachers and students may happen hundreds of times a day while in others they may be an infrequent occurrence. The former might be the case, where the staff's repeated interactions with students are characterized as close, affectionate, strongly committed, and informal. So too, staff might repeatedly engage in the same social practices among themselves (which the students continually observe). On the other hand, there might be schools where highly rigid ritualized interactions between staff and students occur hundreds of times a day. Such interactions characterize marked

differences in authority, impersonality and high social distance, and social control by staff when dealing with students and each other.

### 2.2.4 Homologousness

Knottnerus (1997) in his theory of Structural Ritualization describes homologousness as the degree of perceived similarity among different Ritualized symbolic practices. RSPs that exist in a domain of interaction can exhibit to varying degrees a perceived correspondence or similarity in their form and meaning. The greater their correspondence the more likely they will have the same outcome. In other words, these practices reinforce each other, enhancing their dominance in the environment and their potential impact on actors within an embedded group.

Knottnerus and Poel-Knottnerus (1999) mentioned about several unique ritualized practices that occurred between staff and students in the nineteenth century French secondary school system. Teachers addressed students in a rigid and sarcastic manner in the classroom. Supervisors dealt with students in an arrogant manner. Teachers outside of class were consistently distant and formal in their interactions with pupils. And, youth were subject to extensive surveillance and strict supervision by the school staffs in both the dormitories and classrooms. All of these were highly homologous ritualized symbolic practices in that they exhibited similar patterns and meanings. That is, they involved rigid hierarchical relationships, social power played a central role in each case, and actors occupied the same position or role in all of these ritualized practices. For instance, students were always subordinate to others ranked higher than them in a strict and clearly delineated social arrangement.

A further conceptual distinction is made between two modes of homologous ritualized symbolic practices (HRSP) (Knottnerus, 1997). They are as follows:

Concurrent HRSP = HRSP that occur within an immediate domain of interaction. Here, ritualized practices are simultaneously present in a social setting.

Successive HRSP = HRSP that occur within a domain of interaction at different temporal or historical periods. In this case, HRSP can occur within a sphere of interaction in different time periods or generations and still have a significant impact on actors.

In general, the above discussion suggests that homologous ritualized symbolic practices facilitate the reproduction of social structure in embedded groups. Nonhomologous ritualized symbolic practices, on the other hand, do not have the same effect. Rather, they probably lead to change, innovation, and new social patterns and arrangements (Knottnerus, 1997).

### 2.2.5 RSP Resources

Resources include materials which are needed for actors to engage in RSPs. RSP resources are different from resources in general and can be interpreted as goods which actors possess or are made available to them. This factor highlights the important role resources play in

ritualization and the construction or reproduction of social structure. The greater the availability of relevant resources, the more likely or easier it is for ritualized symbolic practices to be engaged in by actors.

Resources are found in various domains of interaction. They can exist in larger social environment or embedded groups, and can refer to many kinds of attributes and commodities. Interaction skills, talent, physical strength, cognitive abilities, equipments and human skills are some of them. For instance, important resources available to school teachers include educational tools which make it easy for them to engage in practices aimed at surveillance and control of youth. The knowledge and expertise of teachers allow them to engage in various routinized activities ranging from advising students in the classroom to working with a social distance according to status distinctions within their social worlds. Examples in organizational contexts would include the knowledge and social skills of managers or directors which allow them to engage in various practices ranging from the praising of office workers to interacting with each other according to authority differences within the workplace.

Actors vary in their abilities or capacities to be involved in ritualized practices and to be influenced by them. Only those practices that can be managed by actors will be used by them in their own behavior. Some ritualized symbolic practices may require resources such as cognitive skills which are not available to individuals. In such cases, RSPs have no meaning for actors and do not influence them.

Knottnerus (1997) makes a distinction between two types of resources such as;

Human RSP Resources = abilities and characteristics of actors perceived by group members to be of value (or have utility) for themselves or the group.

Nonhuman RSP Resources = all that is not human and perceived by group members to be of value (or have utility) for themselves or the group.

Such distinctions are useful for identifying what kinds of resources are needed to carry out certain kinds of ritualized practices in different situations. In addition, people may prefer to use different types of resources under different conditions.

In addition to these four factors, Knottnerus (1997) uses the concept of rank in SRT. Rank is the relative standing of a RSP in terms of its dominance.

Ritualized symbolic practices can vary in the degree to which they are dominant in a domain of interaction. Or, to state it somewhat differently, ritualized practices can differ in their importance within a particular setting. Furthermore, they may be assigned a value to indicate their degree of influence. This value is determined by a process that includes RSP occurring in different environments and embedded groups.

In the SRT, Knottnerus (1997) explains the process of ranking as follows:

RSP in environment $e$: $R_e$, where $e = (1, 2, ..., n)$

Rank of RSP in environment *e:* Rank $\{R_e\}$, for instance rank $\{R_1\} = 2$, rank $\{R_2\} = 4$, rank $\{R_3\} = 1$, and so on.

RSP in embedded group *g:* $R_g$, where $g = (1, 2, \ldots m)$

$R_e$ *and* $R_g$ refer to the presence of ritualized symbolic practices which actors are exposed to and/or engage in within the larger social milieu and ritualized symbolic practices which develop within the embedded group. $R_e$ is part of the objective reality actors are exposed to in the larger social environment which they internalize, while $R_g$ involves the externalization of social forms in their immediate (i.e., embedded) social world (Knottnerus, 1997).

To be more specific, one or more social environments may exist which influence the emergence of ritualized symbolic practices in one or more embedded groups. It is possible that several environments exist in which actors are exposed to or engage in ritualized practices which have different ranks. $R_e$ and Rank $\{R_e\}$ express these possibilities. $R_g$ refers to the possibility of one or more embedded groups. Thus, the theory is presented in an abstract manner to explain processes occurring in various conditions, for example, one or multiple environments or domains of interaction.

The theory states that the greater the degree of salience, repetitiveness, homologousness, and availability of resources, the greater the rank or relative standing of ritualized symbolic practices in that environment. The greater the dominance of these practices, the more likely new, yet similar ritualized symbolic practices will emerge among actors in an embedded group. Such a process results in similar patterns of ritualized practices and structural arrangements, i.e., structural reproduction, in the wider social environment and the nested group. In making these arguments the formulation emphasizes that the social processes and structures that emerge in groups may be significantly influenced by other social environments that groups come in contact with (Knottnerus, 1997).

Knottnerus (2006) also explains how collective ritual events such as rallies, holiday celebrations and religious ceremonies operate and influence actors' emotional states and commitment to a group. Four factors play a role in the process of generating emotional intensity and integrity within a group. These factors include:

1. **Focus of attention**
2. **Interactional pace**
3. **Interdependence**
4. **Resources**

Focus of attention in a collective event refers to the different symbolic elements, items, or logos that people may be aware of and focus on. Interactional pace refers to the degree to which actors are engaged in a sequence of repetitive acts. Interdependence of actors refers to the degree to which actors may or may not be contributing equally to the ritual performance. Finally both human and non human resources are crucial for enacting collective ritual events.

The present paper integrates these ideas with certain concepts in the original formulation of SRT which focuses on four factors - salience, repetitiveness, homologousness, and RSP

resources - that determine the dominance or importance of ritualized practices (Knottnerus, 1997; Knottnerus, 2009a; Sell, Knottnerus, Ellison, and Mundt, 2000; Knottnerus and Poel-Knottnerus, 1999; Mitra and Knottnerus, 2004; 2008). According to the original theory, the rank or relative standing of ritualized practices is a function of these factors as denoted in the following formula:

*Rank = F (Focus of attention + Interactional Pace + Interdependence + Resources)*

The four components of a collective ritual event as listed above can be conceptually linked to the four factors of the original theory that influence rank. We can relate focus of attention to salience, interactional pace to repetition, interdependence of actors to homologousness, and resources (such as human and nonhuman resources) to RSP resources. More precisely, in this study, we employ the concept of rank in assessing how the emotional and cognitive dimensions of audiences in a collective event impact actors. If a RSP ranks high it draws the attention (or focus) of people, is repeated often, encourages greater involvement (or interdependence among actors), and adequate resources are available to conduct the ritual practices.

Later in Chapter 4, the integrated theory of SRT and coping capacity is utilized to interpret how the ritual process contributes in reducing disaster risks of the case study communities.

Also, SRT gives an insight into how collective ritual events have an impact on social behavior in terms of generating emotional intensity and commitment towards the group (Knottnerus, 2006). Consequently, the term social capital is coined in this study. Ritual participation leads to the development of emotional intensity among actors which in turn helps to sustain such practices in a community (Knottnerus, 2006). The synergetic effect of emotional intensity among actors can contribute to the development of social capital as important social infrastructure.

Also, this study conceptualizes rituals as catalysts that activate the built-in coping mechanisms in a community. In other words, rituals function as auxiliary element to enhance capacity by developing social capital. For instance, communities possessing similar resource capacities can respond differently during disasters because of the differences in degree of active social networks and mutual coordination. In the subsequent part of this study, Structural Equation Modeling shows a casual linkage between social capital, ritual and disaster variables. The sections below discuss the development of social capital through rituals and its significance in reducing disaster risks.

## 2.3 Social Capital and Rituals

In social science, the concept of social capital is defined generally as the norms and networks that enable people to act collectively (Portes, 1998; 2000). Putnam (1993), the most prominent advocate of this approach describes it as features of social organizations, such as networks, norms, and trust that facilitate action and cooperation for mutual benefit.

Collins (2004) uses the term social capital to explain the functioning mechanism of a social structure. In the theory of interaction ritual chains (Collins, 2004), it is explained that human bodies are charged with emotions and consciousness while making interactions. Rituals are understood as social processes carried out by human beings to meet the functional requirement of a situation. The emotional intensity and motivation to work collaboratively in order to fulfill social functions increase with the establishment of interaction chains among individuals. Individuals get more committed to each other with interaction chains and give high regard to their mutual relationships. Collins (2004) points on two aspects; first one is shared trust among co-participants, and the second one is social norm that defines what the actors are doing and how they can expect each other to do.

The amount of social capital that individuals possess are dependent on network ties, which are micro-social events consisting certain kinds of repeated social interactions (Collins, 2004). Interaction chains that are attractive and successful are repeated instead of getting broken off. When memberships are propagated via shared emotions, just as a business boom, an increased intensity of trust spreads out to include more people (Collins, 2004). Rituals can promote social interactions and subsequently develop mutual trust among actors. Consequently, it enriches social capital and enhances functioning of a social structure.

### 2.3.1 Social Capital and Disaster Risk Management

Though the field of social capital covers huge area of research, we find very few researches related to social capital and disaster risk management. Nakagawa and Shaw (2004) describe about the significance of social capital in disaster recovery in the context of earthquake disaster of Kobe, Japan and Gujarat, India. From a disaster management perspective, there is evidence that community structure with decentralized decision making through social networks using trust and reciprocal normative behavior leads to a more effective disaster response (Neal and Phillips,1995). Buckland and Rahman (1999) explain that communities characterized by higher level of physical, human and social capital are better prepared and more effective responders to flood. Also, their findings show that high level of social capital complicates the decision making process in community development activities.

The basic idea of social capital is that a person's family, friends, and associates constitute an important asset that can be called in a crisis (Portes, 2000). Those endowed with a diverse stock of social networks and civic associations are in a stronger position to confront poverty and vulnerability, resolve disputes and take advantage of new opportunities (Woolcock and Narayan, 2000).

Dyne (2005) explains that community is the locus of the response to disaster and such social units have the social capital necessary to respond to disasters. He further adds that communities already exhibit considerable resilience in dealing with various types of disasters. His study explores a new dimension on how social capital could be built and enhanced in any community. Earlier researchers paid little attention on how to create social capital that can be utilized to achieve the desired outcome. Dynes (2005) mentions that local social system is the logical and most viable base for all stages of emergency actions and certain specific mechanisms can be utilized to increase collective responsibility and community identification

which are the components of social capital. To this end, civic occasions such as anniversaries, disaster memorials and festivities are helpful. Enhancing the existing community network and social structure makes it convenient for information flow during disasters, and increases the efficiency of decisions within established authority which is crucial in the case of disaster for timely response (Dynes, 2005). Earlier disaster management practices focused more on reducing physical vulnerability, however, in recent times it has been realized that enhancing the social capacity helps to reduce human toll. As witnessed in severe disasters such as Kobe, Japan earthquake 1995, neighbors and individuals are the first to save the victims as the Government or Non Government Organization has limited capacity to help everyone (Nakagawa and Shaw, 2004).

As disasters are simply a fact of life, Japan has developed several advanced structural and non structural measures to deal with these hazards. It is found that social capital is crucial to mobilize community efficiently in disaster recovery (Nakagawa and Shaw, 2004). At the same time, existing networks and associations within a community can play a vital role to keep residents alert in a pre disaster situation and sustain their built-in capacity to cope with uncertainties. For instance, every year local people in Kishiwada city, Japan are invigorated with ritual (*Danjiri matsuri*) spirit which renews social bonds and relationships that they already possess. In fact, there is a long history in Kishiwada, at the local level, of associations (formal and informal) and networks committed to individual and community welfare that may enhance people's capacity to withstand misfortunes such as disasters (Dylan, 2003). Though not explored to a greater extent, the ritual based formal and informal associations and networks can be important in mutual assistance during disasters (Bankoff, 2007). These associations and networks have largely gone unnoticed by disaster professionals who have sought to establish more mono purpose disaster related associations according to their own criteria of what such organization should comprise. Therefore, they often fail to recognize the existence of other multipurpose ones that don't share the same outward form but may fulfill many of the same functions. These can include social institutions such as ritual based organization under *Chonaikai* that can play an active role in building the community capacity in a pre disaster context.

The conceptual diagram (Fig. 2) helps to explain the different forms of social capital that exists in a society. Such social capital plays important role in different stages of disaster management from rescue, relief to mitigation and preparedness. Rituals are expected to define the role of different agencies to cope with uncertainties in the event and such built-in scheme or social capital can be helpful during disasters.

Nakagawa and Shaw (2004) categorize social capital as;

**Bonding social capital** – It includes trust among community members that are expected to be built through community programs such as rituals. Regular participation in community activities is expected to build mutual trust which is an important element of bonding social capital. Bonding social capital is built by formal and informal networks among various community groups. It facilitates a democratic decision making process and establishes social norm within a community.

**Bridging social capital** – Nakagawa and Shaw (2004) include extended networks among diverse stakeholders such as neighborhoods, town planners, NGO/ CBOs, local adminstrations, academicians, community activity groups and other associations in the bridging social capital. Rituals provide opportunity for communities to extend their networks and interact with agencies outside them. Consequently, communities can utilize this bridging social capital in community development issues and disaster risk management.

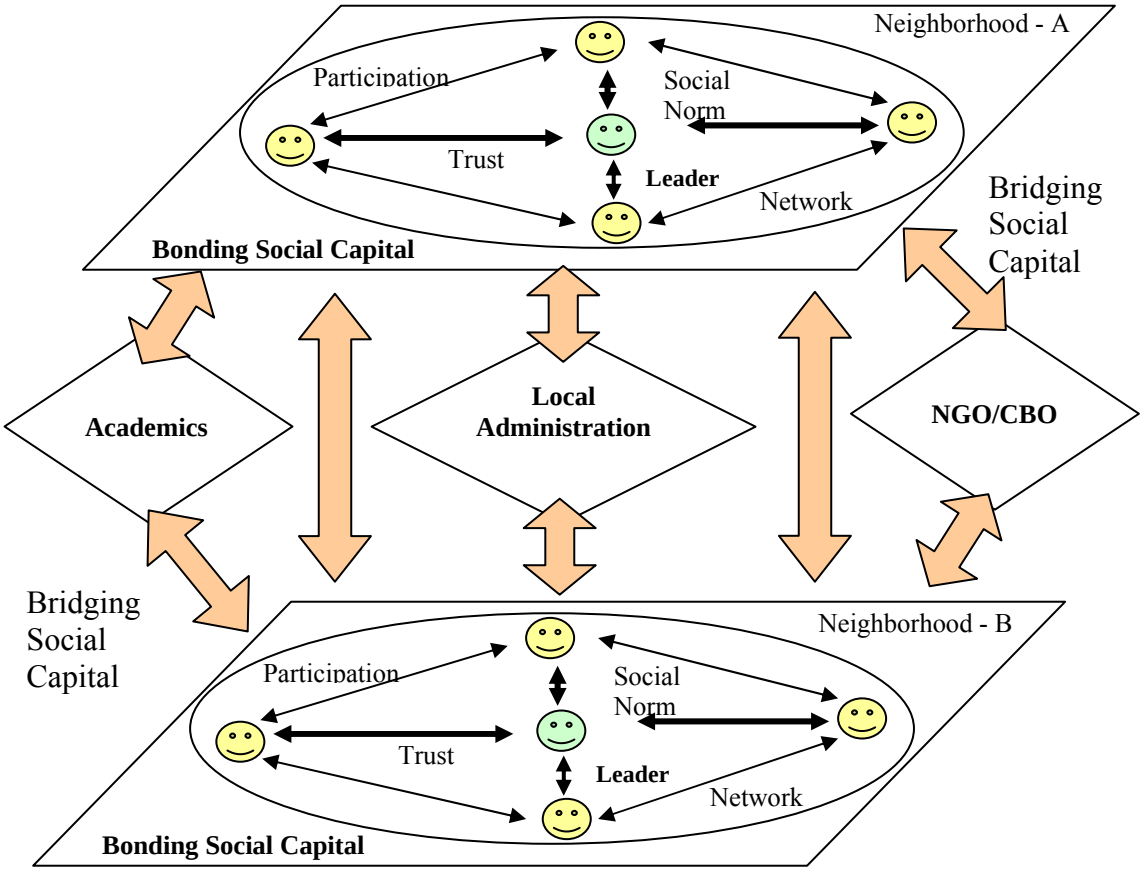


Figure 2 : Conceptualizing Bonding and Bridging Social Capital

It must be realized that no community is fully equipped and planned to keep the disaster loss to a zero (Quarantelli, 1988). The only measure that we can adopt is to be aware and well prepared in order to minimize the losses which can vary depending on the vulnerability of the community. Ritual which involves small scale management of uncertainties (Fig.3, Picture 1 and Picture 2) can keep the momentum of preparedness in a community and combined with other community based disaster risk reduction practices can enrich the capacity to face larger disasters.

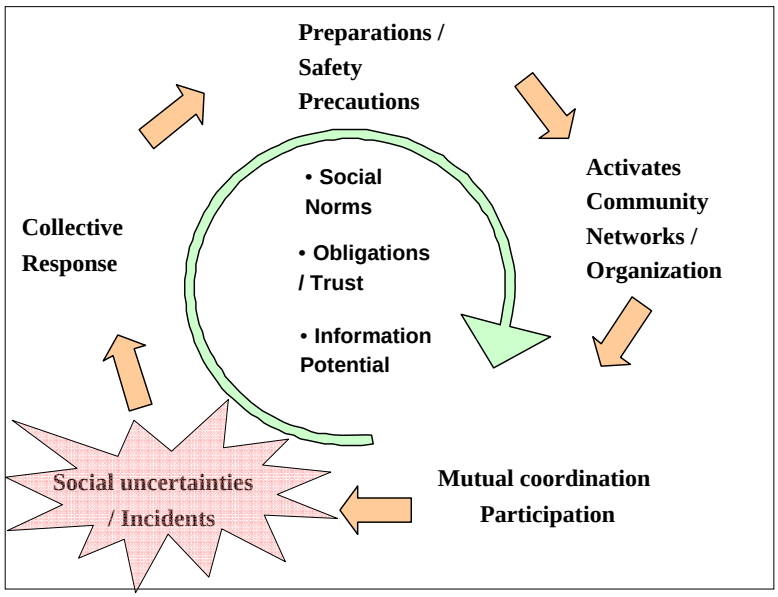


Figure 3: Ritual Management Cycle
(Source: Based on field study at Kishiwada, Japan, 2009)

Picture 1: Local people making preparations for the *Danjiri Matsuri*
(Source: Field Survey, Kishiwada, 2010)

Picture 2: Security personnel kept alert during the ritual event
(Source: Field Survey, Kishiwada, 2010)

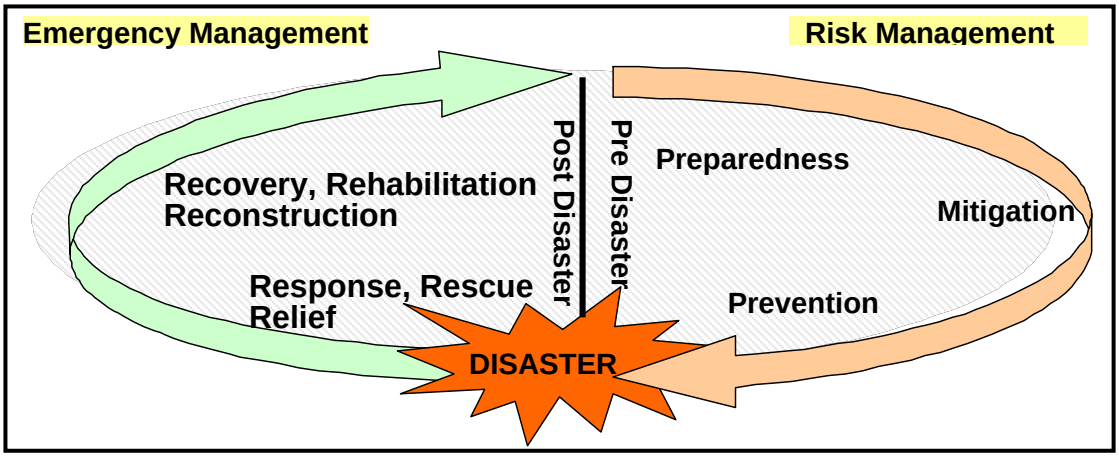


Figure 4: Disaster Management Cycle
(Source: Alexander, 1993)

Ritual management cycle (Fig.3) and the Disaster cycle (Fig. 4) resemble each other in the management schemes that are utilized in different time frames. Disasters are in much larger scale then minor casualties in rituals. However, Quarantelli (1988) points out that preparedness and planning for larger scale disaster is no more than an extension of everyday safety measures, the only difference being one of degree. The crucial part is to make a community activated at every moment so that it gains adequate experience to face a disaster

which is beyond the reach of people (Misra and Okada, 2005). The loop of disaster management cycle is very long and the scale of disorder could vary depending on the scope of impact, speed of onset, duration, destructive potential, predictability, possible forewarning and so on.

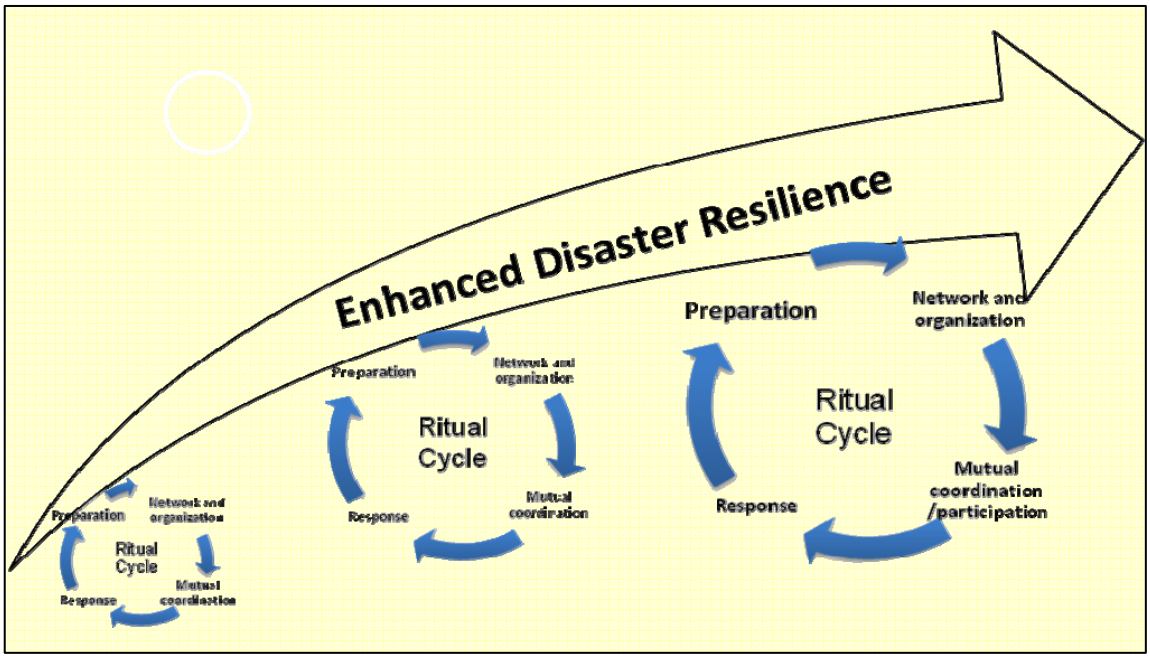


Figure 5: Adaptive Management Loop
(Source: Based on field study, Kishiwada, Japan, 2009 & Okada, 2006)

Adaptive management loop (Fig.5) explains how automatically repeated ritual cycle enhances the resilience of a community by building the adaptive capacity of a community to cope with threats and social uncertainties over time. The accumulated ritual management experience can be expected to help the community to be readily mobilized and act on uncertainties that are not bound on space and time. Rituals are also expected to develop mutual trust, collaboration, motivation, participation, volunteers, commitment and rapid flow of information among community members that are crucial to cope with disaster situation.

Generally, disasters are expected to breakdown the social order of a normal life. The resiliency of a community depends on how quickly it can regain the social order (Paton and Johnston, 2001). It is crucial to return back to normal mode from the tension mode in order to minimize the losses from disasters (Mishra and Okada, 2005). The ritual organizations are well adapted to handle social disorders that are common during rituals. In order to increase efficiency as well as effectiveness in any organized response to a disaster there is a need to avoid duplication, conflict, overlaps and gaps in actual response (Quarantelli, 1988). Ritual planning provides a strategy to better mobilize a wide range of groups in preparation and response to emergent situations. Each disaster is different and brings unexpected shock (Quarantelli, 1988). Still, a general preparedness approach of rituals should be considered to improve the disaster response of communities.

### 2.3.2 Trust

Yamagishi et al. (1998) and Yamagishi (2001) mention that trust provide solution to problems in socially uncertain situations. Social uncertainty exists when someone is incapable of correctly detecting interaction partner's intentions or his dishonesty. According to him, there are three types of trust as shown below (Refer Table 2):

Table 2: Types of trust

| Types | Characteristic | Level of uncertainty |
|---|---|---|
| **General trust** | Belief in others regardless of their behavior / related to human benevolence | More uncertainty involved in relations |
| **Particularistic trust** | Based on committed relations / prior experience of behavior | Very little uncertainty involved in relations; sufficient information about partner's intention – mutual control |
| **Distrust** | Prevent from interactions outside acquaintances | No uncertainty |

(Source: Yamagishi, 2001)

Societies characterized by high level of general trust tend to be low in particularistic trust and the vice versa (Yamagishi, 2001). People staying in social isolation or in established relationships with committed partners pay the opportunity cost by leaving opportunities outside the sphere. Yamagishi (2001) points out that general trust is a form of social intelligence which distrusters lack. Socially intelligent people develop a willingness to enter into social interactions that help them to build generalized trust. Distrust breeds further distrust while trust makes one willing to enter into further social interactions. Ultimately people develop high general trust over time and become careful attendant of information and become cautious about its trustworthiness.

Rituals promote social interactions among people. According to Yamagishi's theory it can be expected that these interactions among diverse groups of people inculcate a sense of general trust and social intelligence among people. Building general trust among ritual participants may also contribute in enhancing their ability to assess disaster information more sensitively. As a result, people can be keen and alert about disasters matters and preparedness options.

## 2.4 Conclusions

The literature review includes discussions on the concept of ritual, coping with disaster risk, structure ritualization theory, social capital theory and trust. Ritual is a symbolic act. For instance, human interactions defining a mode of social life are rituals. It can occur both in religious and secular setting, while this study focuses on the latter one and particularly in the context of coping with natural disaster risk.

Interpreting rituals in terms of building capacity of community to cope with disaster risk is a challenging task. Structure ritualization theory (SRT) gives some leverage in this direction to understand the ritual process and how various ritualized symbolic practices rooted in the ritual episode influences actors involved in the ritual. Salience / focus of attention, repetition, homologousness/ interdependence and resource use influences the behavior of actors embedded in domains of interaction in a social environment.

SRT describes how emotional intensity and group commitment can be developed through a ritual process. Collins (2004) also explains how chains of human interaction rituals generate emotional intensity and develops trust among co-participants. This study considers social capital as an outcome of ritual practices which involves trust building, and expanding networks and relationships. Dynes (2005) describes about the significance of social capital in enhancing the disaster resilience of a community. Trust is also assumed to build social intelligence and make people more sensitive about disaster related matters.

Ritual management cycle is explained in the literature review with reference to disaster risk management cycle. The adaptive management loop has been conceptualized as a process how a community gains adaptive capacity through regularly repeated small scale ritual management cycle to overcome large scale uncertain event such as natural disaster. For instance, when a community regularly engages in coping with small social problems such as crime and robbery, one can expect that it activates the capacity of community system and improves its preparedness level to overcome large scale social crisis.

Based on this literature survey, the following chapters analyze data of case study areas in Nepal and Japan. The explanations will focus on how the ritual process, and social capital built through rituals enhance disaster resilience in the communities.

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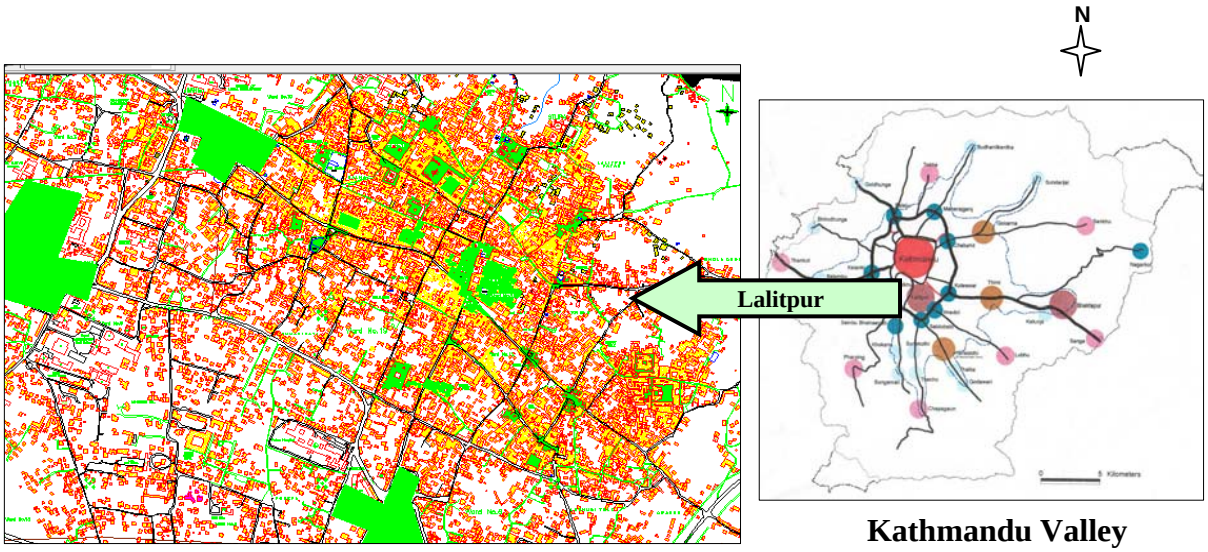
# Chapter 3: Case Study Areas, Rituals and Field Survey

This chapter introduces the case study areas and the ritual events carried out both in Nepal and Japan. It also gives a brief description of the ritual events including historical background, social significance and some facts about their relationship with disasters and mishaps in the locality. Brief background on rituals will be followed by a description of research methods adopted in this study.

## 3.1. Lalitpur, Kathmandu Valley, Nepal and *Rato Machhendranath Rath Jatra*

Lalitpur is one of the traditional cities within Kathmandu Valley with a dense urban settlement. The municipality contains 15.4 square kilometers of land surface and constitutes a total of 22 Wards. The population density varies from around 540 people per hectare (pph) in the core area up to 46 pph in the outlying areas of new urban development (LSMC, 2008). The present study focuses on the densely inhabited areas of Ward 16 and 18 in the City with total households of 989 and 1287 respectively (CBS, 2001).




Core area of Lalitpur (Source: KVMP, 2001)

**Kathmandu Valley**
(Source: KVMP, 2001)

Figure 6: Lalitpur City in Kathmandu Valley

Past records show that there have been regular occurrences of huge earthquakes in Kathmandu on an interval of every seventy-five years (NSET and GHI, 1998). Recent reports (NSET and GHI, 1998) on earthquake vulnerability analysis show that inner city areas are liable to be severely affected by earthquakes with a huge loss of human lives and property. One can expect the potential magnitude of human tragedy to be almost similar to the 2010 earthquake in Haiti which killed extremely large numbers of people. Except for a few non-governmental organizations concerned with community capacity building, disaster risk reduction efforts are negligible and the institutional capacity of local government to assist people living with risk has been insufficient. In this context, the role of community-based

ritual organizations can be vital for enhancing the existing capacity of the community to cope with social adversities and to respond to disaster risk.

Urban rituals mark special social moments within the urban communities in Lalitpur City. There are several ritual procession routes in the city; those that are for the purpose of worshiping a deity and those that are not (Pickett, 2005). The one that falls in the latter category is the funeral procession or "way of the dead." Bimsen Jatra (Fig. 7) is one of the major ritual processions for worship that circumambulates the centre of the city. Different life cycle rituals are observed in these areas which can be extremely important for the physical and social development of those who participate in these social activities. The ritual examined in this study, *Machhendranath rath jatra*, is a magnificent collective event witnessed by more than fifty thousand people. The ritual event includes the pulling of a massive chariot through the major thoroughfares of the city accompanied by a huge procession. As an indigenous festival, it is an integral part of the community's social life and occupies a significant place in the local calendar, as well as in individual and collective memories.

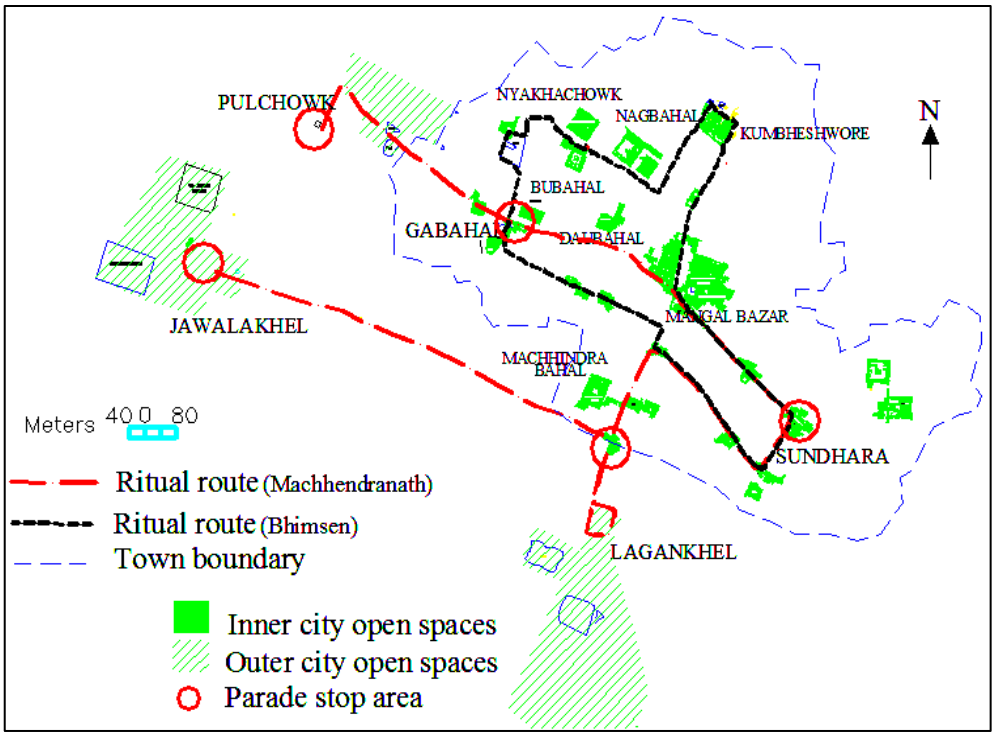



Figure 7: Ritual routes and open spaces in Lalitpur City
(Source: KVMP, 2001)

The event is carried out for more than a month each year beginning at the end of April. All the participating neighborhoods pay their homage to the shrine on a movable chariot as it is pulled through the city's streets and open spaces. The people in Lalitpur make this one of the most important social and religious event of the year which also marks the beginning of rainy season. Thousands of people in the Kathmandu Valley commemorate the arrival of a

benevolent god, *Machhendranath* whom they credit with having saved their forefathers by ending a 12 year drought some 1400 years ago (Khatry, 1996). The ritual is historically named after *Machhendranath*, a cult for Buddhist people in Nepal. Several mythologies prevail about the origin of this popular practice which requires a detailed anthropological enquiry.

*Rato Machhendranath Jatra* involves pulling a chariot (Gutschow, 1979) along the major thoroughfares (Picture 3) of the city with subsequent stops on various open spaces (Fig. 7). On the stoppage, people from various neighborhoods pay a visit to the chariot deity to show their respect and faith. In order to manage the festival smoothly, different neighborhoods are designated to take in charge of the ritual assets and the safety of the participants. So, each stop areas are located tentatively as a nodal point of various neighborhoods that are supposed to patrol the chariot and manage the event (Fig. 8).

Picture 3: Participants involved in Chariot pulling
(Source: http://www.youtube.com/watch?v=HU6SmvBt9jY&feature=related, Oct. 2009)

The ritual, by any measure one of the largest in the Kathmandu Valley, also involves the head of the state. The president attends the last day of the festival to pay his respects in a ceremony

witnessed by thousands. The other important fact about the ritual is interpretations of mishaps during the ritual as reflecting badly on the head of state and the kingdom. Common people talk much about high potential for disaster if something wrong goes on during the ritual event.

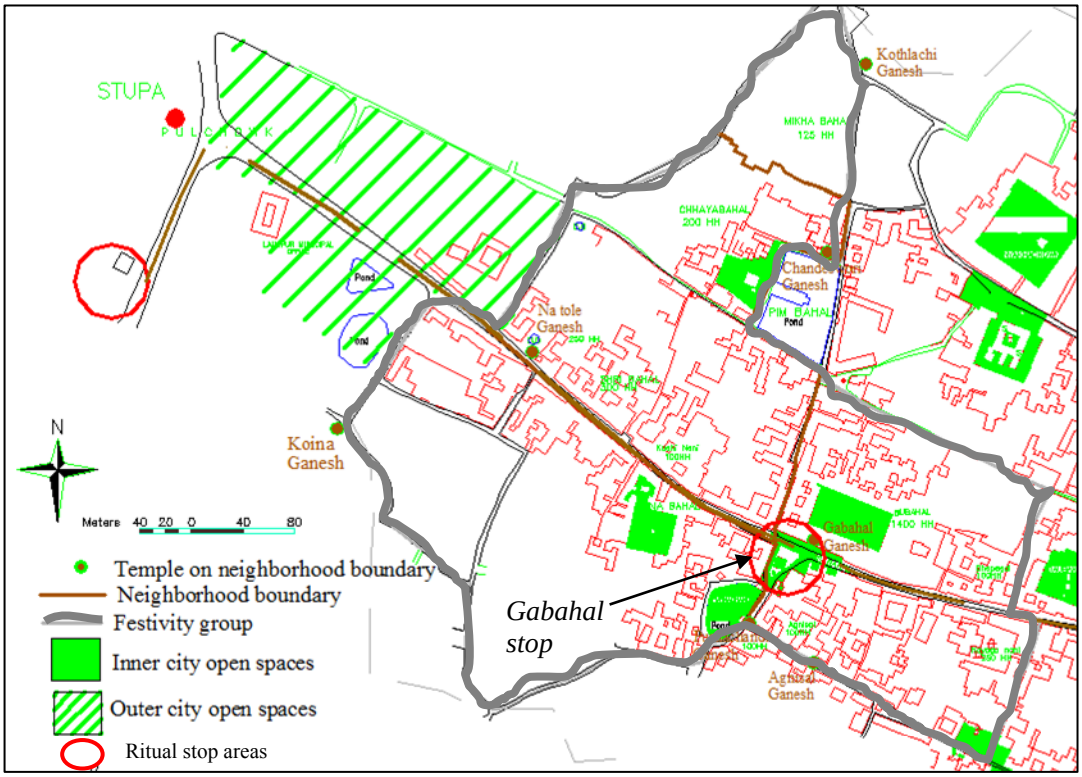



Figure 8: Ritual stop area in *Gabahal* and a surrounding festivity group in Lalitpur City.
(Source: KVMP, 2001 and field survey, Lalitpur, 2009)

From a socio-cultural standpoint, the ritual is equally important. The chariot festival combines all the characteristics of a Newar ritual. Newar are the indigenous people inhabiting in the traditional settlement of Kathmandu Valley (Khatry, 1996; Gutschow and Kolver, 1975). According to Khatry (1996), Newar rituals are basically of three types;

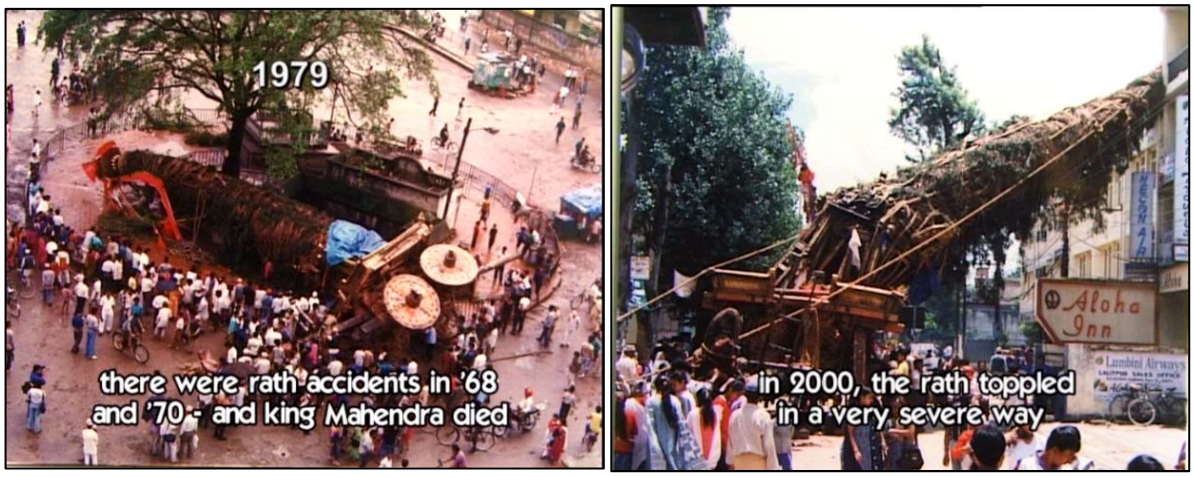
1. The closed type performed by Newar priest who have gone through highly specialized ritual i.e. initiation. Such rite enhances the power of deity and asks for favor which is mediated by the expert/ priest himself.
2. The open type with plain character and led by initiated priest. Family, relatives and community people at large participate in such ritual whose goal is to maintain order against chaos and immediate problems.
3. Community rituals organized for purity, growth or initiation of participant and building community integrity.

The chariot festival incorporates all the characters of the three types of rituals (Refer Picture 4 and Picture 5).

Picture 4: *Newar* priests performing initiation rite of *Machhendranath*.
(Source: Field Survey, Lalitpur, 2009)

Picture 5: Families and relatives worshipping *Machhendranath* chariot
(Source: Field Survey, Lalitpur, 2009)

The main highlight of the festival is the god kept on a built-in throne in a 60 foot tall chariot. The chariot features a massive spire made of timbers, lashed together with split vines, and decorated with pine boughs towering over a wheel base only ten square feet. Though designed articulately to stand erect, the spire occasionally fall over (Picture 6). So, it invites less dramatic mishaps, resulting in damage to buildings and the chariot itself as the procession route winds through narrow streets. In some cases, falling debris or shaking chariot spire causes bodily harm or even death to pilgrims or onlookers.




Picture 6: Ritual mishaps
(Source: Documentary, "*On the road with the red god: Machhendranath*" by Kesang Tseten)

### 3.1.1 Ritual and Disaster

The potential of disaster is a salient aspect of the ritual for the participants, many of whom display photographs of the broken chariot on the walls of their houses which persistently makes them aware about the impending ritual disaster. The massive towering structure of the chariot is built without any structural metal parts and is likely to have some accident along the narrow twisting route of the city center. Ritual mishaps though fascinating for participants, are dramatic and threatening to life and property bringing unintentional destruction. The chaotic manner in which the crowd rushes to pull the chariot leads to the accident. It is generally believed that if the chariot goes awry then it has bad repercussions. The chariot mishap in the past led to some disasters such as death of the King, political turmoil, outbreak of epidemic and even natural disasters such as earthquake. When houses are damaged by the chariot people are suspicious about the owner and regard it as a punishment for his / her misdeeds.

### 3.1.2 Social Significance of the Ritual

Besides its prominent structure, the social significance of the festival is equally important. These rituals and rites organize the heterogeneous population of the community into a homogeneous social unit. People from various social hierarchies such as priests and town cleaners (*podes*) take part in the ritual strengthening the social organization and relations. In the Newar culture, especially the rites and festivals involve feasting and commensality. In this ritual, people also have a picnic along the procession route. Different guests, especially family relatives are invited to join the feast after the worship of the cult. In one hand they believe that god will bless them, while in the other hand commensality increases solidarity among people (Gutschow and Bajracharya, 1977). The ritual is also an occasion to get away from regular hard labor and enjoy family get-togetherness and entertain oneself. The secular value of the ritual is connected with religiosity. For instance, the need of rain to grow crop, the regular problems such as diseases, and hardships are reported and the general belief is that the god who is full of compassion will bless the people.

The festival attracts people of different socio-economic status, caste and ethnicity from all over Nepal. Most of the devotees refer to the god as "*Karunamaya*", the merciful one. Many people come to the festival to make offerings or to help pull the massive chariot along its traditional route, a task requiring the efforts of at least hundreds of people. People consider the service to god as an honor and fulfilling their most important obligations in life. The annual preparations for the ritual include bathing and repainting the image, decorating ritual appurtenances and constructing god's chariot among many other tasks. This requires significant amount of time, labor, money and changes in one's daily routine for extended period of time. The festival and preparations almost last for more than half a year though the actual procession usually last only two months. The date of procession is determined by local astrologers taking into consideration astrologically auspicious celestial configurations. The ritual is a collective action involving social cooperation in which workers are interrelated, interdependent and mutually constituted. There is the *guthi* at local level to oversee the entire ritual event from the beginning to the completion. There is also a separate government *guthi* office to take care of *guthi* land and organize cult festivals. During the ritual, old priests train the newly initiated boys who are likely to substitute them later.

The ritual structure of festival consists of vertical arrangement of persons and groups with horizontal functions. *Macchendranath*, the cult occupies the spiritual space; the ritual space is occupied by the head of state and the priests, and the mundane world is occupied by helpers pulling the chariot, caretakers, ritual managers and the local participants. The festival brings the three worlds – the spiritual world, the ritual space and the mundane world together (Khatry, 1996). The community of priests (*Panejus*) executes all the ritual functions; the community organization (*guthi*) has people playing their traditionally ascribed role in the mundane world.

## 3.2 Kishiwada City, Osaka Japan and the *Danjiri Matsuri* [1]

Kishiwada city is located in Osaka bay of Japan (Fig.9). It is a natural hazard prone area with frequent occurrences of disasters such as heavy rain, flood, typhoon and earthquake. According to the City Office, there are 180 major community organizations (referred as *Chonaikai* in Japan) to serve 81,880 households and the total population of 203,371. Each *Chonaikai* in comprised of associations for elderly groups, women's groups, children's groups and hazard protection groups.

Kishiwada City is renowned for an annual ritual event named *Danjiri Matsuri* (Picture 7). Every September, over half a million people witness this spectacular event. On this occasion, twenty-one participating neighborhoods pull the ritual float (*Danjiri*) from their parish `shrines. The uniqueness of the event is an assembly of individual neighborhood processions engaged in competitive aesthetic and athletic display (Dylan, 2006). Initially, the ritual processions give a sense of inter-neighborhood rivalry, however, towards the end they combine together to form a huge parade, symbolizing a collective identity and mutual coordination among the participating neighborhoods.

[1] *Matsuri* means festival in Japan. *Danjiri Matsuri* is a popular festival which involves hundreds of people pulling a wooden float among thousands of spectators.

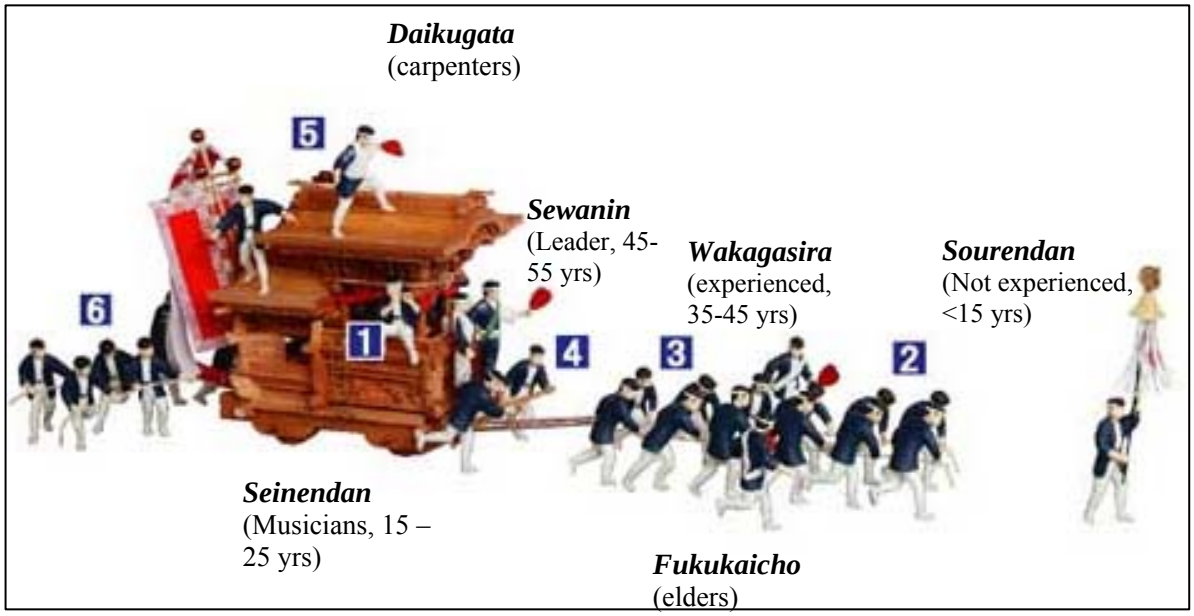

Figure 9: Map of Kishiwada City, Osaka, Japan with *Danjiri* procession route
(Source: Kishiwada City Office, Osaka, Japan)

Picture 7: *Danjiri Matsuri*, Osaka, Japan
(Source: Field Survey, Kishiwada, 2009)

Some key facts about the event include; community participation and social inclusion; repetition; social dynamics during rituals such as, sharing roles and responsibilities by community people in the built-in social system named as *Chonaikai*; loyalty among actors in different levels; the deliberative process of selecting leaders; and spiritual attachment of the residents to the ritual. It can be speculated that each of these factors contribute to the

formation and development of social capital.

The primordial concept of community in Japan is said to be emerged from a cooperative social organization developed to fulfill the requirements of wet-field rice cultivation (Dylan, 2006). It is later recreated as neighborhood associations or *Chonaikai*. And, this neighborhood level is precisely the level of social organization involved in ritual. The organizational structure and social virtues of *Chonaikai* helps to understand about how ritual is managed by local people. A resident in Kishiwada learns various facts about the neighborhood while moving through the various levels of this organization over one's life. The levels range from the *kodomokai,* community association for kids up to the age of fifteen to *sodanyaku,* the counterpart for adults over fifty five. Through these *Chonaikai* level hierarchies, all generations are given a function and guidance during ritual. It would allow anyone of the proper age to fulfill the duties of various positions of responsibility (*seikinisha*), even that of *nenban*, the group's year on duty needed to organize and perform the ritual (Picture 8).




Picture 8: Various *Chonaikai* levels involved in *Danjiri Matsuri*
(Source: http://www.city.kishiwada.osaka.jp/site/danjiri/)

Since its origin in 1703, *Danjiri matsuri* has sustained over time with the social and political changes in Japan. A close look on the evolvement of the festival till today gives us a clear picture about various historical, socio-cultural and political facts that surrounded people in the past (Dylan, 2006). *Matsuri* itself is also a kind of indicator that reflects the socio-political and economic changes of Japan. A retrospect of *Danjiri matsuri* reveals that rulers in the *Edo* period started the festival as a way of paying respect to the shrine, *san no Maru Jinja*, a small branch shrine to the *Fushimi Inari* deity on the Kishiwada castle grounds (Dylan, 2006). It also marked the harvest time of the agricultural community in the past. From the beginning, the festival is characterized by a strict social hierarchy and a distancing of the ruling warrior class from the rest of the society. The early *matsuri* were mediocre and held

three times a year, in the sixth, eighth and ninth months. From the sixth month of 1745 A.D., people of Kishiwada started to celebrate the matsuri in extravagance (Dylan, 2006). This tendency indicates the regional interest of Osaka area in the matsuri and the growing prominence of *danjiri*. The grander form of matsuri featured paper lanterns hung from the eaves of individual residences that lit on the evening of the eve, and the day of the festival. Colorful flags decorated the matsuri and people used drums during the festive procession. Each *chonaikai* competed with each other and spent huge sum of money to construct new and larger *danjiri* with elaborate and intricate carvings (Dylan, 2006). The festival was no longer tied only to the local castle but became a larger urban event. It placed the matsuri in a league with some of the prominent traditional festivals in Japan such as the famous *Gion Matsuri* in Kyoto.

There are instances in feudal period of Japan when the ruling dynasty imposed strict regulation among the local people. They were not allowed to spend lavishly and even not allowed to take rest from their work outside the festival day. After the end of the feudal era, the festival got more localized and with improving economic conditions the festival celebrations were enhanced.

### 3.2.1 *Matsuri* and disaster

Several historical facts relate the festival to disasters that occurred in Kishiwada. In 1827, Kishiwada castle was struck by lighting and burnt down. It was reconstructed in 1954 and people celebrated the successful reconstruction of the castle with the traditional *matsuri*. In the late Meiji period, 1903, the matsuri had to cancel due to outbreak of cholera epidemic. One of the participants in the festival from *Nanmatsu-cho,* a neighborhood, was infected by the disease and the police ordered the warehouse of the *cho* and its *danjiri* to be incinerated.

After the feudal era, the improvement in Danjiri constructions and the road conditions allowed its speed to increase. It invited many casualties such as human injuries and damages to surrounding houses. The matsuri was renowned as dangerous and bloody "*kenka matsuri*". Modifications were made in the post war period to reduce the risk involved by establishing one way *Danjiri* course and installation of brakes on all *Danjiris*.

### 3.2.2 Social Significance of the *matsuri*

Besides its recreational value, *Danjiri matsuri* can be referred as a social occasion. The *matsuri* facilitates interactions among different neighborhoods. One interesting fact is the rivalry that arose among groups in the past holding different *Danjiri* processions. Prior to the renovation of the street that led to Kishiwada Station, today known as *Ekimae Dori*, the *matsuri* ran north and south along narrow alleys. As a result, the procession moving in opposite direction would often collide and social conflict would break out over which procession had the right of way (Dylan, 2006). Nowadays, though such face to face conflict does not exist, still people have neighborhood rivalry to have better *Danjiris* and extravagant processions. Such healthy competition supports in building a sense of commitment towards one's community. Due to this fact, we can observe broad participation of men, women and children of all ages from the entire neighborhood in the display of *Danjiri* float.

The history of *matsuri* during the Second World War is filled with hardships. It was suspended for five years. In 1942, from growing hostilities with China, the *matsuri* became a symbol of fighting spirit and included wartime slogans (Dylan, 2006). In 1944, the residents of each *cho* carried soldiers on *Danjiri* accompanied by shouts of local participants before they departed in front of the Kishiwada station. In the post war period, after surrender in 1945, local administrative organizations at local level or *Chonaikai* were abolished and all *Danjiris* were ordered to be destroyed. Later, with a plead from the local residents the *matsuri* was allowed to continue as a recreational activity. The episodes of hardships of war, defeat, and loss of the *Danjiri* of *Nakanoham-cho* in the air raid in 1945 further generated a communal sense among *Danjiri* loving residents of Kishiwada (Dylan, 2006).

## 3.3 Field Survey

The preliminary research method adopted in this study is field survey. The detailed process of data collection and data analysis is presented in Fig. 10.

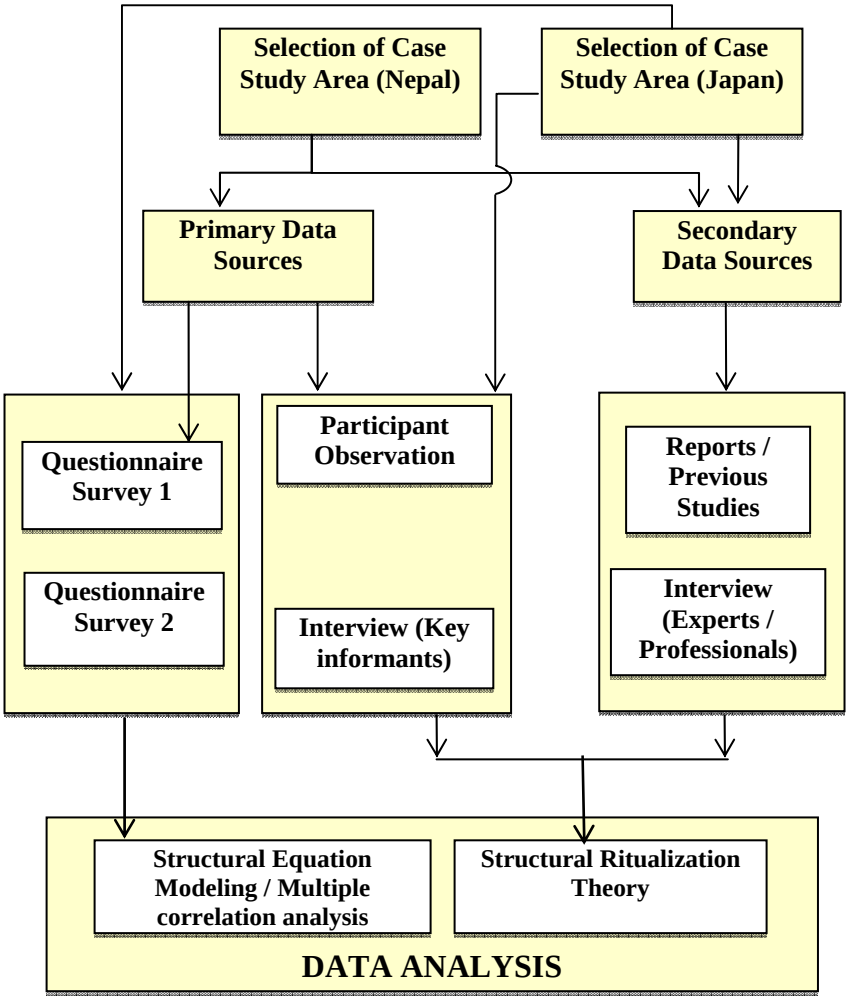



Figure 10: Flowchart showing the process of data collection and data analysis

Ethnographic tools such as participant observation and interviews with key local informants were used during the study. The author was acquainted with the study area and the local people since past ten years. While carrying out this study, regular attendance was made in local activities such as ritual preparations. Discussions were made on subject matter of rituals with local leaders and inhabitants on venues such as pedestrian walkways, local teashops and public rest houses (named as *pati* in Nepali language). The liveliest discussions were made on early mornings when many people gathered on local teashops. Interviews were conducted with individuals often using photographs in order to follow up on witnessed events and to pursue other issues. The traditional urban communities in Lalitpur, Kathmandu Valley and Kishiwada City, Osaka, Japan are used as case studies because of their good repository of cultural heritage in the form of rituals and past experience of natural disasters such as earthquakes.

### 3.3.1 Data Collection

Ethnographic data on ritual was collected while doing field research in Kathmandu during the ritual preparations in the year 2009. Over the course of one and a half months of field research, the authors interacted with local people, ritual organizers, local priests, experts from university, disaster professionals and government officials in order to gather information about the ritual and community participation at Lalitpur in Kathmandu Valley. The familiarity of the authors with the local culture and environment facilitated the research work. In order to get complete information about the activities, many long hours of observations were followed up by long discussions and interviews with key informants. The most helpful informants were senior men between the age group of 60 to 75 years. In their capacity as shopkeepers and farmers, they were not only able to tell the authors what was going on but they also engaged in friendly discourse with their acquaintances in the neighborhood to provide rich evidences and facts about the ritual. Apart from them, members of the ritual event organizing committee and local government representatives were consulted at their respective offices to inquire about the ritual event. The study largely lacks the angle that a woman would give the subject. The interaction with women was constrained due to local cultural practices that didn't allow them to easily interact with strangers. Furthermore the authors had little interaction with low-caste members of Lalitpur society. For the most part then information came in personal observation and in interviews with local residents in their shops and out on streets.

The study also utilized secondary information sources such as ritual manuscripts, articles and books. A content analysis was made to compare and verify the ethnographic evidences collected during the participant observation. The traditional urban communities in Lalitpur, Kathmandu Valley were used as case study areas because of the good repository of cultural heritage such as rituals and their experience of natural disasters such as earthquakes. Interviews were also carried out to know the perception of the local respondents about the ritual event. Those who participated were mostly senior men whom the authors met at their residences, shops and public rest houses. They gave more interesting insight into the potential use of the ritual event in enhancing the capacity of community to cope with social disruption and disaster.

This study uses mix of research methods in order to get insight and understanding about local people's world views and their relationships with the rituals. Some specific methods used for data collection are described below:

#### 3.3.1.1 Participatory Mapping

A participatory mapping method was carried out in Lalitpur City, Kathmandu to examine the evacuation behavior of people in a hypothetical scenario of earthquake. A set of pre-activities were conducted to properly design the mapping process in order to acquire reliable data in the limited time and resource constraints. The authors took help from community facilitators who prepared the venue for mapping and informed people about voluntary participation. A local champion was selected as a mediator to facilitate two way communications and increase trust with the participants. Local *Newari* language was used to get more comfortable with the participants and the role of researcher was limited as an observer. Adequate interest of participants in the subject matter was taken care of and additional activities such as tea breaks were added to engage people actively in the mapping.

Facilitator explained about the base map and the objective of mapping in the beginning. It was followed by a description on a possible earthquake scenario and asking participants about escape routes and safer spaces. Participants were given a task to mark the routes and spaces on a base map. Later they were also asked to layout the vulnerable locations such as narrow streets, exposed electric cables and community resources such as open spaces, health care centers and so on. Laying out the spaces and resources seemed to be easier for participants because most of them were familiar with the spatial organization of their town. Finally, the session was concluded with a short tour to observe spaces and resources marked in the map. Local residents, Red Cross volunteers, non governmental organization representatives and municipality staffs were involved in the participatory mapping exercise.

#### 3.3.1.2 Sociogram

Sociogram is a graphical representation of social links of a person. They can diagram the structure and patterns of group interactions (Wikipedia, 2010). It can be drawn on the basis of many different criteria such as social relations, channels of influence, and lines of communication.

This study uses sociograms to analyze the change in individual level of interactions in two different time periods. One of them is in daily normal mode of life and the other is during ritual mode. Respondents are asked about their frequency of interaction with friends, relatives and neighbors. The options for interactions are daily, 2 or 3 times a week, every week, monthly, 2 or 3 times a month, every month, every year and rare. The most frequent interactions are indicated with the thickest line and the rare ones with the thinnest line. The diagram helps to identify the interdependence among people in different neighborhoods, particularly during rituals. However, a detailed social network analysis using the sociograms has not been carried out in this study.

#### 3.3.1.3 Questionnaire Survey

The study uses questionnaire survey for two purposes. The first purpose is to examine whether rituals contribute to develop social capital for disaster resilience in the case study areas of Nepal and Japan. The second is to observe the sensitivity to information in hypothetical disaster scenarios among high general trusters and low general trusters in Kishiwada City, Japan.

Around 1400 responses from Kishiwada City, Osaka, Japan and around 250 responses from Kathmandu, Nepal were utilized for examining the relationships between rituals, social capital and disaster resilience. In Kishiwada, a group of local participants in a disaster training program were asked to fill out questionnaires related to trust with hypothetical scenarios of pre-disaster situation and post-disaster situation. The responses among high general trusters and low general trusters were evaluated to identify how sensitive they were to information regarding the trustworthiness of other people in the neighborhood. The hypothesis was formulated keeping in mind that people who regularly participate in rituals have high level of general trust. Also, they gain social intelligence and become more sensitive to positive or negative information about other person.

### 3.3.2 Data Analysis

Structural ritualization theory (SRT) has been employed to make a normative analysis of the ritual process in Kathmandu. Interpretations are made from rituals in terms of their role in reducing disaster risk.

While analyzing questionnaire survey data on rituals, social capital and disaster resilience, statistical measures are utilized. Multiple correlation analysis is carried out to identify relationship among these variables. In order to understand the latent role of ritual variables in building a disaster resilient society, structural equation modeling is performed. It helps to show the casual linkage between the latent variables and model community resilience.

#### 3.3.2.1 Structural Equation Modeling (SEM)

Structural equation model is a statistical tool that is used to calculate the direction and strength of casual relationship between latent variables (Byrne, 2001; Ullman, 2001; Arbuckle, 2006; Arminger et al., 1995, 1999; Bentler and Chou, 1987; Bollen, 1989). It is more powerful than multiple regressions as it takes into account the nonlinearities, correlated independents, measurement errors, correlated error terms, modeling of interaction, latent independent variables measured by indicator and latent dependent variables with multiple indicators. SEM is a casual modeling tool and can be carried out both on longitudinal and cross-sectional data. In this study, SEM is used to analyze relationship among variables that predict disaster awareness and self reliance for natural hazards.

In structural equation modeling (Fig. 11), the key variables of interest are usually latent constructs or abstract psychological concepts such as attitude or perception which can be observed only indirectly and imperfectly.

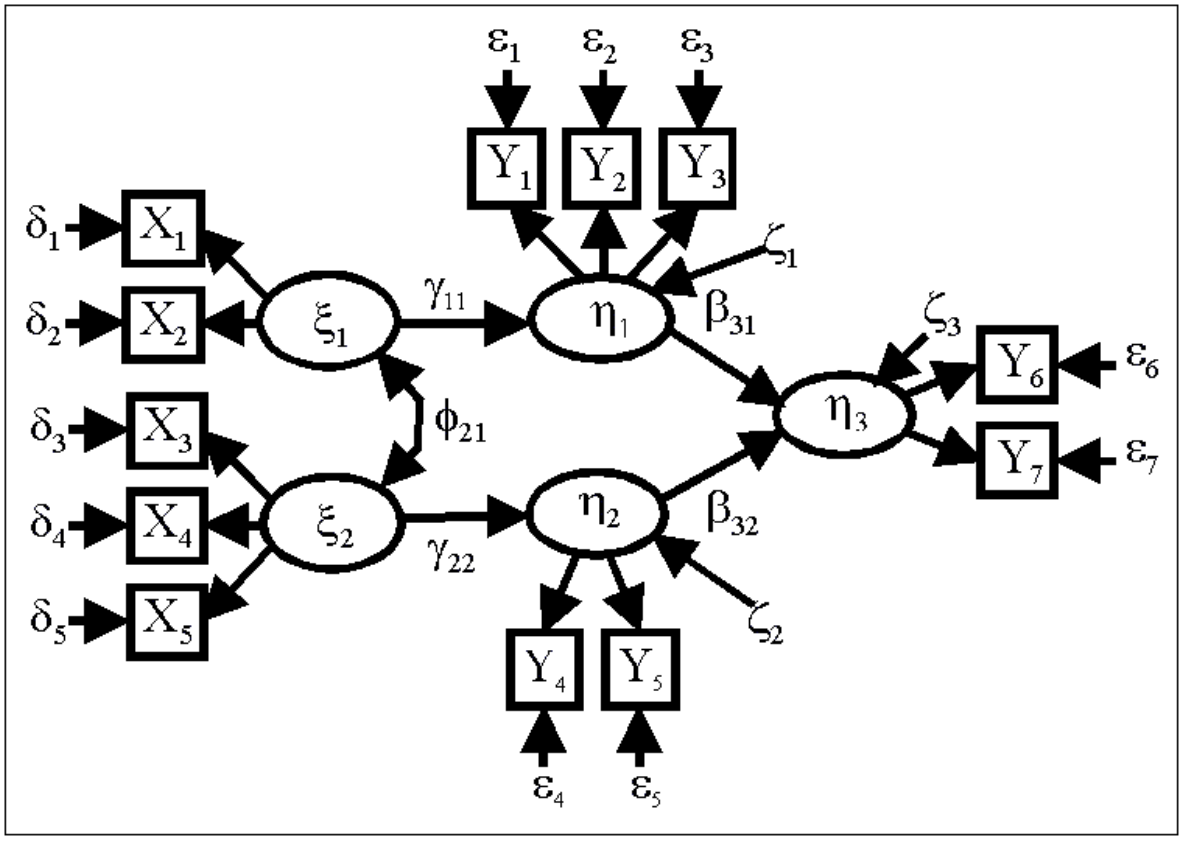



Figure 11: Structural Equation Model
(Source: available http://www2.gsu.edu/~mkteer/sem2.html)

**Legend**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $\xi_1$ | = ksi | $\phi_{21}$ | = phi | $\beta_{32}$ | = beta | $X_1$ = manifest variable (exogenous construct) | $\delta_1$ = delta |
| $\eta_2$ | = eta | $\gamma_{22}$ | = gamma | $\zeta_3$ | = zeta | $Y_6$ = manifest variable (endogenous construct) | $\varepsilon_3$ = epsilon |

A SEM may include two types of latent constructs – exogenous indicated by Greek letter "ksi" and endogenous by "eta" in Fig.11. These two types of constructs are distinguished on the basis of whether or not they are dependable variables in any equation in the system of equations represented by the model. The independent variables in all equations are exogenous construct while dependent variables are endogeneous in at least one equation, although may

be independent in other equations in the system Graphically, each endogenous construct is target of one- headed arrow while exogenous are targeted only by two-headed arrows.

SEM includes the relationships among latent constructs chiefly linear and also non linear relations. One-headed arrows represent regression relationsips, while two-headed arrows represent correlational relations. Regression of an endogenous construct on an exogenous construct is represented by “gamma” and on another endogenous construct is represented by “beta’. Greek character “phi” (Fig. 11) represents covariances of exogeneous construct.

SEM is not expected to perfectly predict their dependent construct, so it includes a structural error term indicated with Greek character “zeta”. In order to achieve consistent parameter estimation, these error terms are assumed to be uncorrelated with the model’s exogenous constructs (Byrne, 2001; Anderson and Gerbing, 1988; Raykov et al., 1991; 2006). However, structural error terms may be modeled as being correlated with other structural error terms which indicates that the endogenous constructs associated with the error terms share common variation that is not explained by predictor relations in the model (Schumacker and Randall, 2002; Schumacker et al., 1996; 2004; Hoyle, 1995).

Actual scores and real data are the manifest variables in SEM that measures the latent constructs. Manifest variables associated with exogenous constructs are labeled X, while those associated with endogenous constructs are labeled Y. The latent construct is associated with multiple measures and each latent construct is modeled as a common factor. SEM includes measurement error terms associated with X measures labeled with “delta” while terms associated with Y measures are labeled with “epsilon”. It is acknowledged that almost every measure term includes some error.

SEM determines the goodness of fit between the hypothesized and the sample data. Latent variables are unobserved variables which are measured by their respective indicators. These indicators are observed variables that we measure in the field with questionnaire survey.

Goodness of fit test in SEM tests whether the model should be accepted or rejected. Model chi-square or discrepancy is the fit test which should not be significant. It means that value of chi-square should be larger than 0.05 to have the model accepted. Similarly, Normed-Fit Index (NFI) has to be close to 0.90, Goodness of Fit (GFI) has to be larger than 0.90 and Root mean square error (RMSEA) should be <= 0.06 for a good model fit (Byrne, 2001).

## 3.4 Conclusions

The rituals described in the case study areas are grand social events which evoke a lot of interest among both the local inhabitants and people from outside. Besides fulfilling the recreational needs of the participants, the rituals have been conceptualized as scientific means to achieve social order and harmony. Most importantly, the possible impact of such events to build disaster coping capacity has been mentioned, though it may not sound so obvious at first hand. The indirect role of dynamic events such as rituals in enhancing social resilience of communities will be explained in later chapters with empirical data.

The study adopts both qualitative and quantitative research methods. In qualitative method, ethnographic approach such as participant observation, participatory mapping and interviews will be used. Prospective theoretical models will be presented and supported with the field data. In quantitative method, sociograms and questionnaire surveys are used to collect the data and statistical data analysis methods such as multiple correlation analysis and SEM are utilized.

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# Chapter 4: Interpretation of Roles of Urban Ritual Events in terms of Enhancing the Capacity of Community to Cope with Disaster Risk; A Case Study of Kathmandu

## 4.1 Introduction

This chapter analyzes the potential role of ritual events in enhancing the capacity of communities to cope with disaster risk. Structural ritualization theory is employed to investigate how ritualized symbolic practices contribute to building social capacity. Employing key concepts from the theory dealing with the emotional and symbolic components of ritualized practices and their importance within groups we focus on how such activities enable people to cope with disasters and the stress caused by them.

In the study of disasters and other extreme events, the concept of coping can be defined as how an individual interprets his or her situation and how he or she behaves in response to a particular stressor (Lazarus and Folkman, 1984). Coping doesn't only include individualized processes but also includes interdependence with the society in the face of stressful situations (Thornburg et al., 2007; Knottnerus and Thornburg, 2008). Ritual as a dynamic social event provides ample opportunities for a community system to function and enhance its efficiency while coping with unpredictable social disruptions (Dynes, 2005). Collins (2004) mention that ritual is a dynamic social event that promotes chains of interactions. Previous research in disaster affected communities show that people adopt various coping strategies such as seeking support from friends and families, engaging in prayer and other religious activities to provide meaning, and self blaming or avoiding discussion related to the event (Ibanez et al., 2004).

Based on data from a field study of neighborhoods in Lalitpur, Kathmandu Valley, we analyze how urban ritual practices can play a crucial role in contributing to the ability of people to cope with disaster risk.

## 4.2 Theoretical Framework

*Structural Ritualization Theory*[2] (SRT) developed by Knottnerus (1997, 2009a, 2009b) along with the concepts of coping capacity is employed to better understand how ritual practices contribute to the social capacity of a group to overcome disaster risk. The integrated theoretical framework in Fig. 12 identifies the relationship between the four factors of SRT influencing emotional intensity and commitment to a group and the group's capacity to cope with disaster risk.

[2] In *Structural Ritualization Theory*, Knottnerus (1997) defines salience as the degree to which a ritualized symbolic practice within a domain of interaction is prominent, conspicuous, or noticeable. Repetitiveness is the relative frequency with which an RSP is performed. Homologousness refers to the degree of perceived similarity among different ritualized symbolic practices (RSPs). In a domain of interaction RSPs can exhibit varying degree of perceived similarity or meaning. The greater their correspondence these practices reinforce each other and enhance their dominance making it more homologous. Finally, resources refer to materials needed to engage in RSPs which are available to actors.

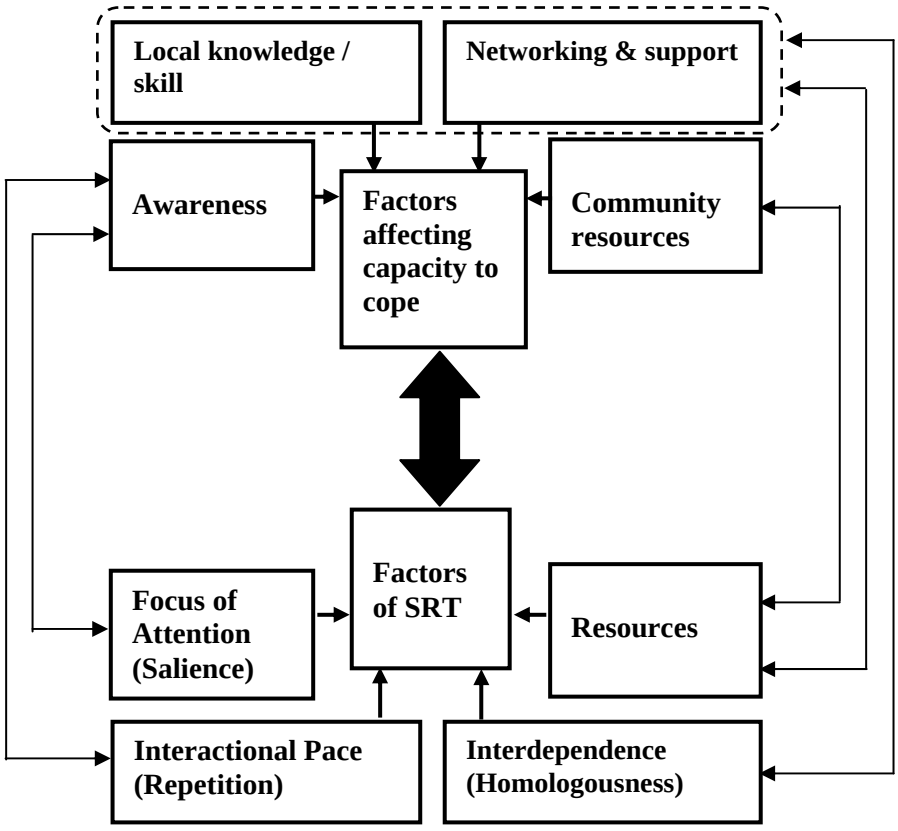



Figure 12: Integrated theoretical framework showing the interrelationship between SRT factors and coping capacity.
(Source: Bhandari and Okada, 2009; Bhandari et al., 2010 )

The framework highlights the importance of ritualized practices for enhancing the social capacity of groups. It conceptualizes ritual as a dynamic social process in which community resources are mobilized in order to meet various ritual needs (Knottnerus, 2006). Furthermore, such a theoretical framework helps us to better understand how rituals can contribute to social renaissance. More specifically, this means that rituals can be used not just for fulfilling religious and spiritual needs, but can also act as agents of change. Symbolic activities in a ritual event involving meaningful objects, human activities, words, relationships, gestures, and performances that capture people's attention can help to generate awareness among actors about different kinds of concerns and can lead to changes in social behaviors and attitudes (Knottnerus, 2006). For instance, during ritual processions there are not infrequently occurrences that leave audiences spellbound such as when an out of control chariot collides with buildings, its giant wheels crushing the path it travels on, while threatening crowd members. During these moments, people experience a strong sense of how human lives can be put at risk and the need for vigilance and the importance of being collectively prepared to cope with such events. We argue that a ritual, which is traditionally conceived of as a religious exercise, can play a key role in disseminating social values about, for example, the importance of preserving the natural and humanly constructed environment, reinforcing the

importance of people working together as a community, and the need for equalitarian relations among different social classes in certain circumstances.

*RSPs*[3] in communities such as the one examined here are not consciously designed to deal with a particular disaster and may at first glance seem irrelevant. However, ritualized practices, among other things, can help to develop social bonds and strengthen the integrity of preexisting social ties which are important resources for coping with disaster situations. For this reason, we conceptualize ritual as a strategic social experience which can enhance the social capacity of communities. This argument and the theoretical perspective of SRT provide the basic framework for our analysis of evidence dealing with the importance of ritual events.

## 4.3 Research Methodology

To examine this issue we employ a case study of Lalitpur in the Kathmandu Valley of Nepal. Lalitpur is an old urban community which has a rich cultural heritage and a history of natural disasters, especially earthquakes. Several research strategies are used, including participant observation. The first author participated in ritual preparations and carried out extensive observations of certain ritual events. Discussions with a number of key informants were also conducted. And interviews were carried out with a variety of individuals in the community. Observations of ritual occurrences were recorded using extensive note taking along and photographs of these events. Because the first author is from Nepal he is proficient in its language and possesses an extensive understanding of the social dynamics (including the protocols of social interaction) and history of this society.

Field research focused on ritual preparations and performance occurred in 2009. Over the course of one and a half months, the author interacted with local people, ritual organizers, local priests, experts from the university, disaster professionals, and government officials in order to gather information about the ritual and community participation in Lalitpur in the Kathmandu Valley. The familiarity of the author with the local culture and environment greatly facilitated this research. In order to get complete information about the activities, many long hours of observation were followed up by long discussions and interviews with key informants. The most helpful informants were senior men in the community, members of the ritual event organizing committee, and local government representatives. A content analysis of ethnographic evidence from secondary sources such as ritual manuscripts, articles, and books were conducted and compared with the findings generated through participant observation.

Furthermore, a participatory mapping method was adopted in order to examine the relationship between urban open space management and ritual practices. It involved a group of local residents, community based organization volunteers, non-governmental organization (NGO) representatives, and municipality staffs. Interviews were also conducted with local respondents to learn how they perceive ritual events. The local perceptions of people provide

[3] RSPs means ritualized symbolic practices. A more detail explanation on RSPs is given in literature review in Chapter 2.

important insights into the potential use of ritual events for enhancing the capacity of a community to cope with social disruption and disaster.

## 4.4 The Case Study Area – Lalitpur[4]

The study area is located within the traditional urban communities in Lalitpur, Kathmandu Valley, Nepal. Urban rituals mark special social moments of the local people. Different life cycle rituals are observed in these areas which are important for the physical and social development of the ritual subject. The ritual considered for this paper is a magnificent collective event witnessed by more than fifty thousand people. *Machhendranath rath jatra*[5], the ritual event includes pulling a massive chariot along the major thoroughfares of the city accompanied by a huge procession. As an indigenous festival, it is a part of social life and occupies a significant place in the local calendar, as well as in individual and collective memories.

Kathmandu Valley is prone to multiple hazards. Past records show that there have been regular occurrences of huge earthquakes in Kathmandu on an interval of every seventy-five years (NSET and GHI, 1998). Recent reports (NSET and GHI, 1998; and Guragain, 2004) on earthquake vulnerability analysis show that inner city areas are liable to be severely affected by earthquakes with a huge loss of human lives and property. One can expect the potential magnitude of human tragedy to be almost similar to the 2010 earthquake in Haiti which killed extremely large numbers of people. Except for a few non-governmental organizations concerned with community capacity building, disaster risk reduction efforts are negligible and the institutional capacity of local government to assist people living with risk has been insufficient. In this context, the role of community-based ritual organizations can be vital for enhancing the existing capacity of the community to cope with social adversities and to respond to disaster risk. Community activities such as rituals can provide a platform to solve local problems and raise public concern on social issues that need collaborative action.

The following sections describe the findings from the study area, local perceptions about rituals and discussions with reference to the integrated theoretical framework (Fig.12).

## 4.5 Findings

### 4.5.1 Ritual event

Based upon findings from our field research, preparations for the ritual began nearly a month before the actual event. Various *Guthi*[6] *or* neighborhood organizations were actively involved as they completed their assigned tasks. Some people traveled miles away in search

[4] Refer to Chapter 3 for more detailed explanation about the study area.

[5] *Machhendranath rath jatra* is the ritual event in which Buddhist deity named *Machhendranath* is honored.

[6] Guthis are inbuilt social systems based on familial and non familial relations which play a vital role in the social life of people for instance, carrying out rituals, funerals, and solving local problems. Generally, neighborhoods within the city own a large parcel of land and the farming product from it is used for carrying out various collective socio-religious practices.

of good quality wood in order to build the chariot structure and its wheels; while others helped clear the ritual routes and open spaces. In a special event during the preparation period, a group of priests in charge of the ritual travelled through different neighborhoods collecting offerings for the ritual worship. Frequently, scores of men and women gathered together to donate money and household goods. A local belief prevailed among the residents that a person would acquire merits (of a religious nature) by serving the city god. During another occasion, a group of local carpenters walked along the major thoroughfares of the city displaying items for building the massive ritual chariot. Local observers explained that this was a custom to ensure the public that the items used were sufficiently sound for building a strong chariot, and everyone could participate without the fear of a chariot mishap. Reflecting upon the enthusiasm of local people during these ritual preparations, local organizers predicted that more individuals from different backgrounds would participate this year than ever before. During the field study, we also learned that it was a long-standing norm to invite close relatives and friends to the event. Thus, in preparation for the ritual, every household stored grains, meat, and liquor.

Interviews with local participants including questions about their experiences in past ritual events reveal that on almost every day while the chariot is being pulled throughout the neighborhoods, a household feast is organized named "*choilabhu*" in the local *Newari*[7] language. Participants reported that in this feast they consume huge amounts of meat and liquor in order to gather energy for moving the massive chariot. They continue to engage in this social activity every day until the chariot reaches the prescribed destination within the neighborhood.

Some participants also remarked that the task is easy during the early days of the ritual period because the chariot is new and strong, but after a couple of weeks the whole chariot structure weakens and starts shaking which means that pulling it to desired destinations becomes a much more strenuous activity. Many of them noted that in 2001 they toiled for several weeks because the chariot broke down during the ritual procession. Most persons believed that the mishap brought misfortune as the royal massacre in Nepal took place later that same year.

After pulling the chariot to each neighborhood destination, the local participants of the respective neighborhoods organize a closing feast at their homes named "*bhujiya*." Interviewees described it as a moment of celebration. According to tradition the safe movement of the chariot through the neighborhood streets brings good fortune. In discussing the guest list they point out that in-laws, brothers who live apart on their separate properties, and other close relatives are invited to the feast to mark this auspicious moment. Such private family gatherings clearly create an atmosphere which facilitates communication between all the parties present. Everyone shares his/her hardships throughout the year, oftentimes providing material and moral support to each other. By sharing their experiences and difficulties, respondents mentioned that on such occasions social relationships are renewed and mutual trust is developed among each other. Most of the respondents also revealed that outsiders are not invited to such family gatherings.

[7] *Newars* are indigenous people living within the compact traditional settlements in Lalitpur, Kathmandu valley. *Newari* is the language of these ethnic *Newar* communities.

Another finding worth noting concerns the participation of residents from seven different villages on the outskirts of Lalitpur City, who pull the chariot to the last destination. According to interviewees, this usually occurs around early June every year, after which the ritual ends. In explaining the possible reason for their involvement, respondents explained that the main water source to Lalitpur in the past was located near these villages. Close cooperation with these villagers was necessary in order to fulfill water demands for the agricultural community in Lalitpur. Though there is little use of this water supply system at present, the traditional custom still prevails. A professor of cultural history, who is also a permanent resident of Lalitpur, described it as a mechanism which establishes regional ties with surrounding settlements.

Local respondents also mentioned that a mega event is organized on every twelfth year of the ritual cycle. During this occasion the chariot is pulled from a small village on the outskirts of Kathmandu Valley to Lalitpur. They report that this long and arduous trip usually results in several accidents along with human injuries.

Overall participants displayed a strong desire to participate in the ritual practice examined in this study. As is usually the case people found it to be an exciting and entertaining event. During the procession, they walk through the city streets chanting prayers while pulling the chariot and stopping when the chariot lashes into the roof top of houses and collides with various obstacles, finally arriving at huge open spaces where the noisy crowd gathers together. For the participants, taking the chariot around the city is a gala occasion when everyone tries to be blessed by physically touching the god which rests in the chariot. In the procession, the god is kept on a built-in throne in the sixty feet tall wooden chariot (Picture 9).


Picture 9: Chariot Pulling along the City Streets
(Source: Field Survey, Lalitpur City, Kathmandu, 2009)

They believe that the chariot is an honor to the deity, a manifestation of its status and power. And engaging in the arduous task of pulling the massive chariot is considered a service to the god which brings good luck. Huge numbers of men, women and children join the parade and pull the holy shrine. Not surprisingly the government staff in charge of the event reported that it is an enormous task controlling the crowd and establishing safety measures during the event. For this reason a group of local volunteers assists them in order to maintain the safety and security of the pilgrims. Individuals from both the government and the community continually work together to organize and manage the ritual event.

In conducting the field research, we also investigated the role of the ritual event in terms of managing urban open spaces. To do so a participatory mapping exercise was conducted among a group of local residents and experts in Ward 16 of Lalitpur (Picture 10, Fig. 13). After providing a brief explanation about the potential for an earthquake disaster in the area, participants were asked to mark possible open evacuation spaces and routes on a map. They were also asked to locate areas for disaster victims, first aid services, and vehicle access routes that could be used during rescue and recovery operations in times of emergency. Interestingly, many local people could easily identify the open spaces and facilities which the experts also agreed were most suitable during emergencies. Most importantly, these open spaces and routes overlapped with ritual spaces. Indeed, local participants regarded these ritual spaces as special or sacred and believed that private encroachments on them could lead to personal losses. For instance, respondents described how a neighbor lost his family members after utilizing the public space for his own personal use. What we find is that residents clearly recognize those spaces and routes which are used to carry out ritual events like the one described here**.**

Picture 10: Participatory mapping of vulnerable locations and evacuation spaces in Lalitpur
(Source: Field Survey, Lalitpur City, Kathmandu, 2009)

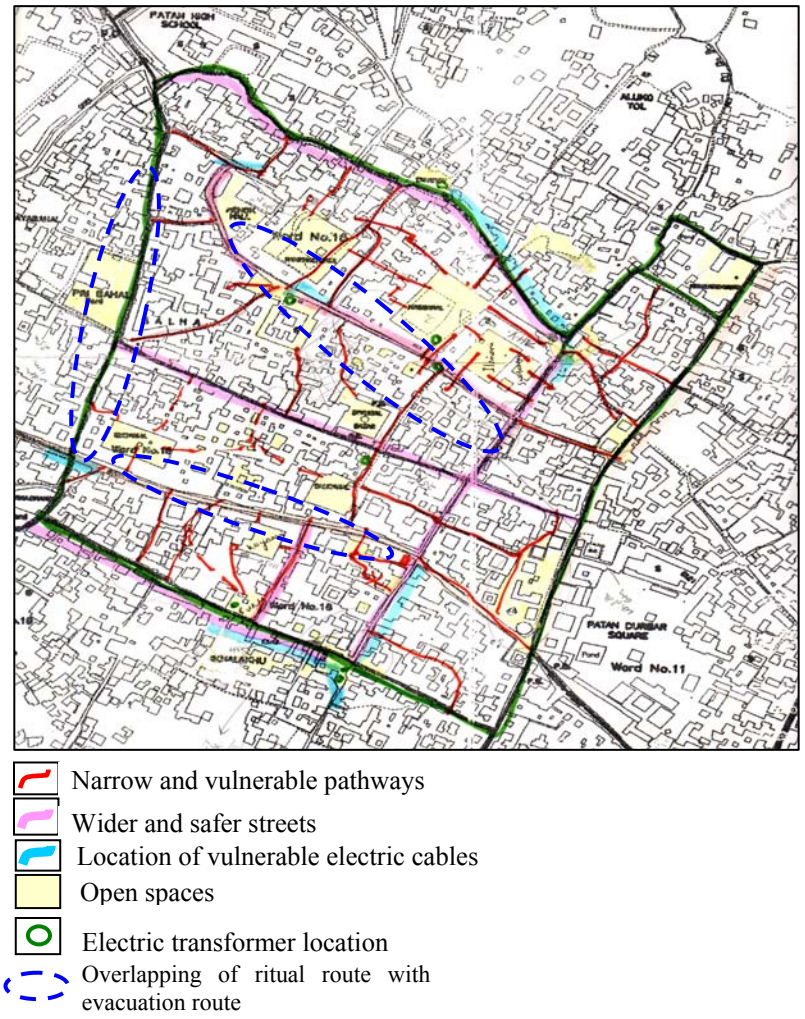



Figure 13: Layout of open spaces and evacuation routes in Lalitpur by participatory mapping.
(Source: Field Survey, Lalitpur City, 2009)

In sum, various forms of evidence including ethnographic observations enable us to construct a comprehensive description of this ritual event. This evidence includes crucial insights about the event derived from the local residents themselves who are the main actors in this ritual practice. Their views (and the other types of evidence collected here) we believe are invaluable for an analysis of how such events can enhance the social capacity of the community to deal with disasters.

### 4.5.2 Local Perceptions

People's perceptions about ritual reveal a strong passion for participating in such activities, a great respect for ritualized practices, and the belief that ritual experiences generate a sense of community. The evidence indicates that people attend the ritual event for a variety of reasons, including curiosity, because their friends are participating, to be with their family, and to get to know new members of the community. *Machhendranath rath jatra* is perceived by many residents as a well deserved break from their monotonous normal life and an opportunity to

renew friendships with neighbors within the public spaces where the ritual is carried out. Some participants state that the ritual experience provides a positive and valuable learning experience about the norms and culture of their local community. While most residents perceive benefits from participating, whether they for instance see it as an opportunity to socialize or simply because it's fun, there are some who believe the festivities are too hectic and troublesome. The latter group of residents argues that rituals seem chaotic and unorganized and even result in human casualties because of inadequate preparation and planning. At the same time, it should be noted that frequently residents who make such remarks attend and actively participate in the ritual due to the sway or impact of local custom and an immense social pressure and fear of social exclusion which prevails within the community. Many of these persons participate in the ritual event due to these compelling societal reasons.

A variety of ritual experiences are found among men and women, residents and non residents, and different age groups. For instance, younger people find the ritual to be an exciting and enjoyable experience as they take part in the highly charged collective event engaging in activities such as running with the rolling chariot. Women often carry out a number of tasks such as preparing for parties, welcoming guests in their home, and utilizing spare moments to observe and participate in the event. Older persons (usually male) are more concerned about the management of the event and often provide guidance and support to younger people in order to conduct the task more efficiently. Local residents also show more concern for the safety of the entire event. For this reason sometimes conflicts arise when non-residents attempt to mislead the procession route. Respondents often mentioned fights that had broken out among drunken rivals in the past and how the security system was mobilized in order to settle the matter. While such occurrences disrupt the ritual procession, people felt that once these flare-ups are resolved everything usually returns to normal with all parties cooperating with each other.

In many ways, this ritual is a central component of people's social life. During ritual occasions local residents do not go to work or plan other major events. When responding to the interview question; "What do you think about the festival as a resident of Lalitpur?' a young man excitedly replied that it is like a party and an important event for him. He then went on to explain that the festival is important in his life because it is something he participated in when he was younger and something that his father and brothers still participate in. It is worth noting that a belief also exists among local residents regarding the time of the event. It starts before the monsoon which is quite important to the agricultural community in the greater Kathmandu Valley. The significance of the long and colorful ritual for heralding the beginning of the rainy season continues to this day even for present urban dwellers.

While the ritual is an integral part of the social life of people, most residents are not aware of the potentially strategic value of the event for enhancing the capacity of the community to cope with disaster risk. When asked about the ritual, individuals emphasized their roles within the community and their respective contribution to successfully conducting the ritual. Many also expressed their concern about chariot mishaps which are dramatic and threatening to life and property. Furthermore, people also noted their concern about social conflict and potential injuries during the ritual occasion, and mentioned that they have become more

conscious about the need to increase the level of safety. Local organizers have become more cognizant of these concerns and have increasingly enlisted the support of the local police, Red Cross, and emergency centers at hospitals to ensure the safety of participants during the ritual occasion. In this regard community volunteers from *Guthis* are mobilized throughout the procession route to minimize possible riots and to help participants with minor injuries.

Interestingly, enough informal discussions with local people reveal a widespread belief that if the chariot festival goes awry, it forebodes some disaster in the city. As support for this belief many members of the community point to the massive earthquake of 1934 and the royal massacre of 2001 which occurred after the chariot collapsed during the ritual procession.

Another unique and rather curious perception among many persons is that the collective ritual event sanctifies city spaces, and ensures the safety of people by driving away evil spirits. The rationale behind this local belief we believe can at least in part be interpreted in terms of the visual surveillance that the ritual procession provides in urban areas. The regular movement of residents through city spaces involves a monitoring activity whereby people are continually checking the status of open areas and how they are being used (a practice which can be symbolized referred to in other ways, e.g., a collective activity which exposes, resists, and purifies these spaces of hidden spirits). In this sense, the ritual procession is vital to keeping the widely distributed open spaces intact and helping to avoid undesirable encroachments on public areas. Indeed, as we shall next discuss, open spaces located within densely built urban housing are the "breathing" areas during normal times and potential evacuation spaces during disasters such as earthquakes.

In sum findings concerning the perceptions of people indicate that most residents' attitudes towards the ritual are quite positive and optimistic in nature. However, these perceptions do not specifically involve an awareness of how such rituals are potentially valuable and constructive exercises for reducing disaster risk. In the next section we discuss how our findings can help us better understand how ritual may contribute to community disaster risk reduction practices.

## 4.6 Discussions

Our argument that ritual events can enhance the capacity of a community to deal with disaster risk is grounded in an analysis of our research findings employing SRT's integrated theoretical framework. More precisely, the four (previously discussed) factors identified by SRT which influence the emotional intensity and overall impact of rituals enable us to better understand how ritual enactments contribute to the ability of the urban community examined here to cope with the disruptive consequences of large-scale disasters such as earthquakes.

### 4.6.1 Structural Ritualization Theory and Implications in Disaster

#### 4.6.1.1 Focus of Attention

Focus of attention is one of the key components of ritual events which impact actors and the group they belong to. It refers to ritual objects including physical items, spatial elements, persons, logos or symbols displayed within the event that draw the attention of participants.

Various factors govern the focus of attention of actors in a ritual performance including the nature of the event and people's state of mind. The timing of the event, physical layout, the arrangement of persons and material items used in the ritual, technology, and the orchestration of the collective occurrence can directly impact the level of attention group members give to a particular aspect of the ritual. At the same time, an individual's cognitive state or capacity can affect how much he/she perceptually apprehends the ritual performance (and particular parts of it) and the extent to which ritual symbols capture people's focus of attention.

Beyond this, ritual events often create a change in people's taken-for-granted behaviors and social life. Collective ritual events are usually characterized by a distinct demarcation and separation from normal daily life. For instance very definitive temporal or spatial markers may identify when and where the event should take place. Factors such as these along with the overall special and oftentimes dramatic quality of the ritual enactment help to capture the attention of participants and wider audiences. Having addressed the focus of attention as defined and discussed in SRT, the role of this ritual component in disaster risk reduction can be more fully analyzed in regard to our case study.

***Disaster Implications:*** Rituals can be interpreted in terms of two aspects of focus of attention;

**a. Indirect (masked) implication**

The masked implication involves the indirect utility of rituals in disaster risk reductions. In Kathmandu, the chariot ritual takes the shape of an anniversary celebrated in the memory of tragic past events. Some people relate it to a severe drought in the past while others commemorate the catastrophic earthquake of 1934 A.D. that occurred after the festive mishap. This helps to create strong psychological and emotional impact upon individuals, and revive the tragic social memory among community people. In this case, disasters are hidden in memories and every ritual occasion reactivates the memory of participants about bitter experiences of the past. However, disaster professionals should be careful while conceptualizing rituals as a tool to generate disaster awareness. Rituals have recreational outlook and their social meaning is often misunderstood. With time ritual practices change and the meaning it holds is misunderstood. It is important to understand the social meanings of rituals so that it can have a desired impact in the community.

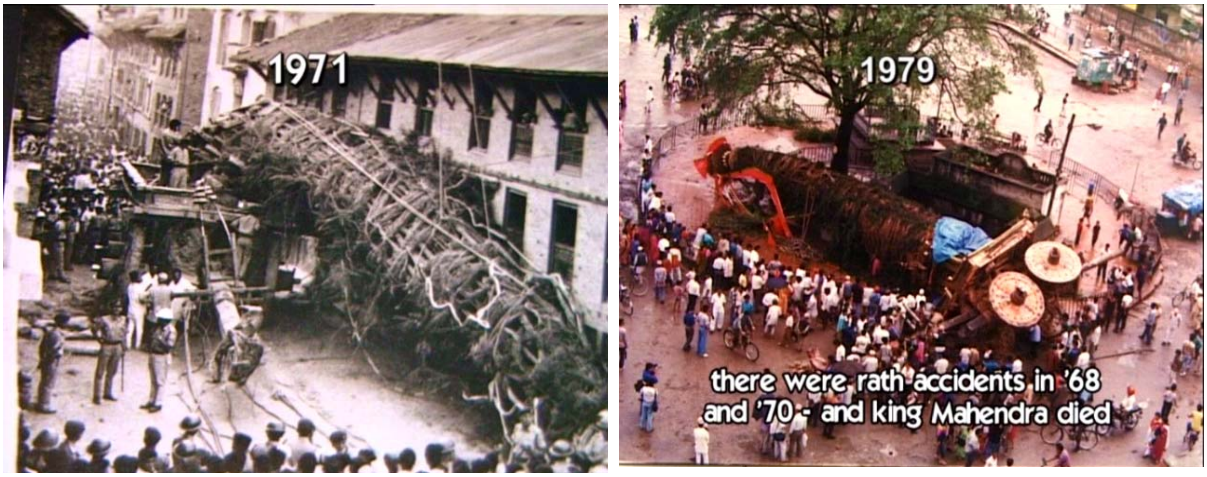
The way a colorful and dramatic urban ritual practice such as this reduces disaster risk is less obvious. Nevertheless, we can offer a number of observations and findings that are directly relevant to this issue. Perhaps most importantly, a key finding from our research shows that the ritual procession facilitates and reinforces people's attention to (or perception of) their physical environment by helping to build awareness about various spatial units within the city.

Participatory mapping (Fig.13) of open spaces and evacuation routes with imaginary earthquake scenarios shows that for residents these areas overlap with most of the spatial zones used for ritual spaces and ritual routes. These are the same spaces, we would emphasize, that were found suitable for evacuation by experts from a local NGO and a city agency dealing with earthquake disasters. Thus, participation in a RSP such as this (i.e., the procession) can play a crucial role in enhancing actors' awareness about urban open spaces

which are important infrastructures for evacuation in case of disaster. Moreover, these nodal points where people gather during rituals can serve as convergence points after the initial evacuation, along with providing spaces for medical assistance and disaster rescue. Of course the larger and more important the ritual practice such as the one examined here, the greater its impact on members of the community and its importance for cultivating their awareness of these crucial spaces that would be used in the event of a disaster.

**b. Direct implication**

It deals with more obvious and easily understood aspects in rituals. Ritual accidents and chaos are easily discerned by local people and form a distinct character of such occasions. There is a moment to capture in every turn of the event. As the chariot, with its tall spire flaming up in the sky, slides gradually along narrow streets, people from every household gather around to take a look at this holy moment. The larger than life trappings of the ceremony and overwhelming sights and sounds, capture the onlookers' focus. Many faithful devotees witness the event as they believe that being a part of the ritual procession cleanses their sins and provides them a moment of solace.




Picture 11: Chariot collapse symbolizing mishap in society
(Source: Documentary, "*On the road with the red god: Machhendranath*" by Kesang Tseten)

The quiet piety of genuine pilgrims is juxtaposed with some odd moments as well which further contribute to the emotional and mental impact of the ritual on actors. As the chariot lashes the feeble roof tops along its way some people make failed attempts to hang onto the chariot spire resulting in injuries. In some extreme cases, the chariot collapses and people are injured (Picture 11). It can also damage buildings along the street. When serious problems such as these occur organizers may halt the ritual procession and reorganize the event to begin again after a few days or even weeks. People witnessing these events often experience a heightened sense of risk to their life and property.

We would also note that RSPs which capture people's attention could be strategically used as a type of disaster drill to train individuals. For instance, the sixty feet tall swinging chariot pulled along the inner streets of the city symbolizes in many ways the tall buildings that swing in a similar manner during seismic vibrations (Picture 12). It is analogous to the *shake-*

*table*[8] demonstrations carried out for earthquake disaster awareness campaigns. The swinging chariot and the casualties it invites could be utilized as a disaster simulation (or sensitizing) exercise that would motivate people to adopt earthquake safety measures thereby enhancing the coping capacity of the community.

Picture 12: Sixty feet tall ritual chariot
(Source: Field Survey, 2009)

#### 4.6.1.2 Interactional Pace / Repetition

The interactional pace of a ritual event refers to the extent to which ritualized acts are repeated. While some acts possess rhythmic gestures such as pulling the chariot and enchanting local slogans in unison, others may be non-rhythmic such as crowds of people wandering along the streets. The greater the frequency or rate with which actors interact, especially if they occur in a rhythmic manner, the greater the impact the ritual practice has on people's cognitions and emotional state.

[8] *Shake tables* are hands-on experiment for students or trainees in which small scale building models are erected on tables which are subjected to artificial vibration in order to demonstrate how such structures behave during earthquakes.

***Disaster Implications:*** The procession is a ritual which has been repeated for many years and which is composed of numerous collective events. *Machhendranath rath jatra,* dating back to 299 AD, is repeated annually in Kathmandu. Celebrations occur for more than a month in various locations within the city and are characterized by a great deal of enthusiasm. Normally people believe they are blessed by participating in the event and state in interviews that the ritual experience leaves a lasting impression on them which endures throughout the entire year.

For instance, an elderly man participating for the seventh consecutive time in the ritual emphasized that the event brings a good harvest and many blessings. He believes that the festival is related to his livelihood and it protects him from all adversities in life. Indeed, many people believe, just like this man, that such regularly repeated collective acts refresh the spirit of people in addition to reinforcing social norms and values that have been passed down through the generations.

Clearly people's often repeated participation in this high charged ritual and its many collective activities (including in many cases rhythmic practices) has a great impact on not only how they feel but their understanding and awareness of their social world, their relations with each other, and the social behaviors they engage in.

Rituals such as the one examined here are dramatic events which provide people an enriching experience in the sense that many normal functions of social life are interrupted and replaced with quite different social practices and modes of thought. For instance, transportation schedules and routes are changed, open spaces are overcrowded with new faces, the use of open spaces change, people remain longer in public areas interacting with each other, and there are even some incidents of crime. The conventional practices and ways of thinking that define the more individualistically focused nature of everyday life do not work in such circumstances. People need a different social schema (cognitive framework or viewpoint) or more generally speaking, orientation, to deal with their changed lifestyle and the uncertainties it presents. The ritual-based cohesive community network provides such a platform by facilitating cooperation among people and helping them to cope with these new contingencies. In an individualistic and function oriented urban life style, ritual based organizations and groups provide a cognitive framework which enables people to deal with this changed situation.

We would emphasize how challenging it can be to facilitate a community's capacity to deal with contingencies which often involve out of the ordinary and/or unpredictable behaviors and to create a virtual environment where basic survival is at stake. Rituals such as these, which repeatedly occur in urban neighborhoods, reinforce social order and community bonds while bringing the issue of human survivability to the forefront due to the occurrence of accidents (sometimes quite serious in nature) during the dynamic ritual episode. Chariot mishaps during the ritual procession repeatedly revive a sense of risk within the community.

For this reason, every ritual occasion provides the opportunity for community members to become actively involved in ritual planning, preparation, implementation, and the evaluation of outcomes. So too, regularly organized rituals also provide an opportunity to check the strengths and weaknesses of the management system and to improve it in order to cope with

ritual contingencies. In the process, the organizational management of the ritual can become more innovative and efficient.

Finally, such a ritual event can foster cooperative efforts and bonds among members of the community. This is quite evident in the comments of a middle aged *Guthi* leader who emphasized how people face many challenges and hardships while lifting and balancing the massive chariot. Any kind of obstacle can hamper the chariot's movement and bring the procession to a halt. That is why loose electric cables and some poles along the streets were removed several years ago in order to allow for the unimpeded and safe movement of the chariot. That is also why local organizers in each *Ward*[9] mobilize neighborhood volunteers to clear and clean the streets and open spaces used for the procession. Such activities bring people together as they work with each other to provide essential public services. Of course, in doing so such ritual events sustain, if not strengthen, a sense of civic involvement, pride, and responsibility among community members.

In essence, when the everyday normal mode of life in a community is disrupted by events such as disasters, the cognitive schemas, behaviors, group dynamics and organizational structures grounded in often repeated rituals such as the one examined here can play a vital role in enhancing the community's ability to cope with such disruptions. These ritual enactments can help make people proactive, flexible, and more resilient, thus enabling them to bounce back from sudden shocks and uncertainties.

#### 4.6.1.3 Interdepedence

Interdependence refers to the degree to which actors are involved in and contribute to a ritual event. In some ritual episodes everyone may become equally engaged, while in other events participants may assume a passive role by observing the ritual performance of a few individuals. People's involvement also depends on the level of complexity of the ritual actions. More complex events can engage individuals in diverse kinds of practices where they collectively work together to accomplish the ritual task. In Kathmandu, members of the ritual community are connected to a local social system named *Guthi* which plays a central role in the production of the collective ritual event. Evidence about this social system and it social dynamics indicates that actors are extremely interdependent upon each other as they create this large annual collective event. The group dynamics involved in the execution of this collective task can be extremely important for reinvigorating the community in the face of social crisis and disasters.

***Disaster Implications:*** Lalitpur, Kathmandu, consists of fifteen different *Guthis* that are responsible for carrying out different tasks during these ritual events. The community system is hierarchically structured according to age and corresponding functions. It is proactive in its preparation and organization of the ritual including the construction of the movable shrine, collecting different material items for conducting various rites, and organizing a large feast for the community.

[9] *Ward* is the smallest administrative unit within a local government in Nepal.

To achieve an enjoyable and accident free festival, local residents are compelled to cooperate, provide mutual aid to one another, and encourage similar behaviors along with a sense of civility among local youth. Some of the features of the procession include neighborhood elders directing the procession and crowd, local volunteers ensuring the safety of ritual participants (e.g., preventing chariot accidents), groups pulling chariots, young adults performing music, and participants chanting prayers in unison. The event also features a slower paced parade joined by small children who get their chance to pull a small chariot. At a special occasion organized during the later part of the festival women are also involved in the pulling of the chariot. The festival incorporates people from every sector of society such as families and couples, wealthy and poor, businessman and farmers, and itinerant holy men. Quite importantly children are taught to participate in the event from an early age.

Since peoples' roles in the festival are defined by an age hierarchy, it also works as a rite of passage providing community members a sense of maturity and selfhood. In this way, the festival and its supporting organization both embody and transmit core social values as they help perpetuate this local tradition.

The enactment of the ritual clearly mirrors the organization of society. Rules and regulations are passed down through a hierarchical authority structure with community administrators at the top and individual residents at the bottom. This structure permeates daily life and in the case of the festival contributes to the efficiency of the social system producing the ritual event. Residents, as they engage in preparations and the festival activities themselves, spend a considerable amount of time in close contact and are by necessity extremely interdependent upon each other. The resulting social bonds are quite significant because they involve emotional ties of common understanding developed through the process of shared experiences. Residents belong to many types and levels of groups within their social world but the social emotional ties they develop through this type of close contact remain some of the strongest in their lives. The community consciousness and spirit of cooperation engendered by local people during the ritual can be extremely helpful in a disaster situation.

For instance, people share indigenous knowledge and skills while working together in the ritual event. Some of this knowledge includes utilizing public infrastructures such as transportation routes, open spaces, and public shelters that can be very useful when evacuating and resettling large number of disaster victims. Neighborhood people, particularly from the same *Guthi* also gather together to share their meals. Female household members spend time with others while cooking together and male household members work together to arrange necessary food and cooking items. Such mutual support is vital in addressing the emergency needs of people in disaster situations.

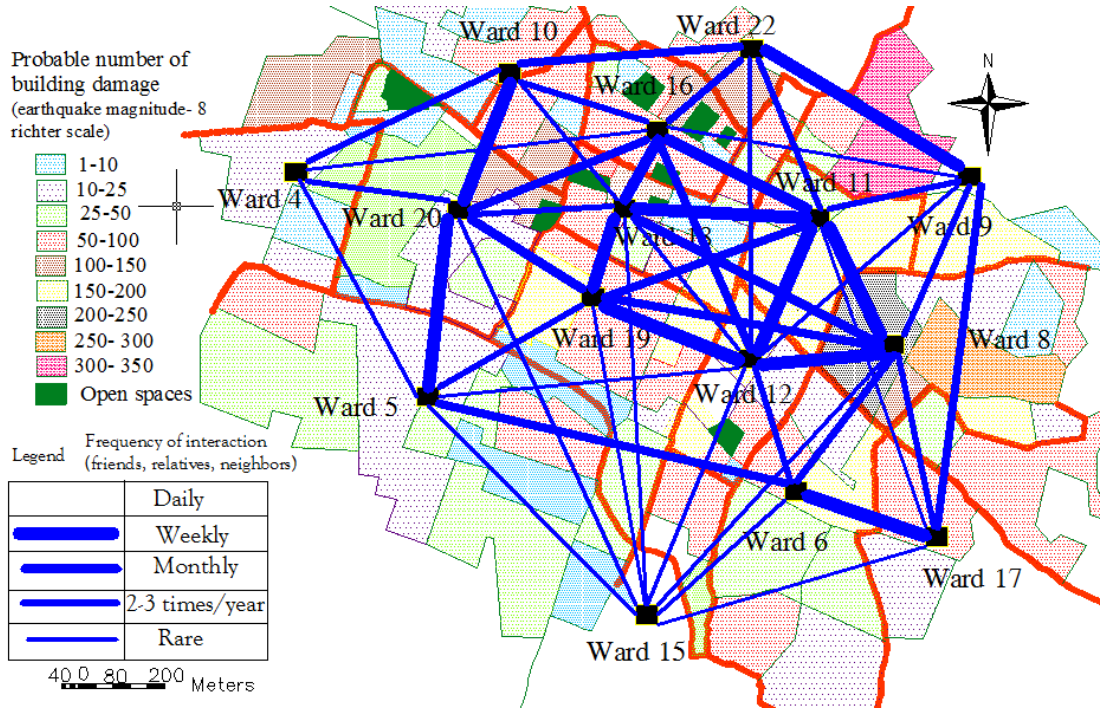



Figure 14: Frequency of interactions during normal time
(Source: Field Survey, Lalitpur City, Kathmandu, 2009; Guragain, 2004)

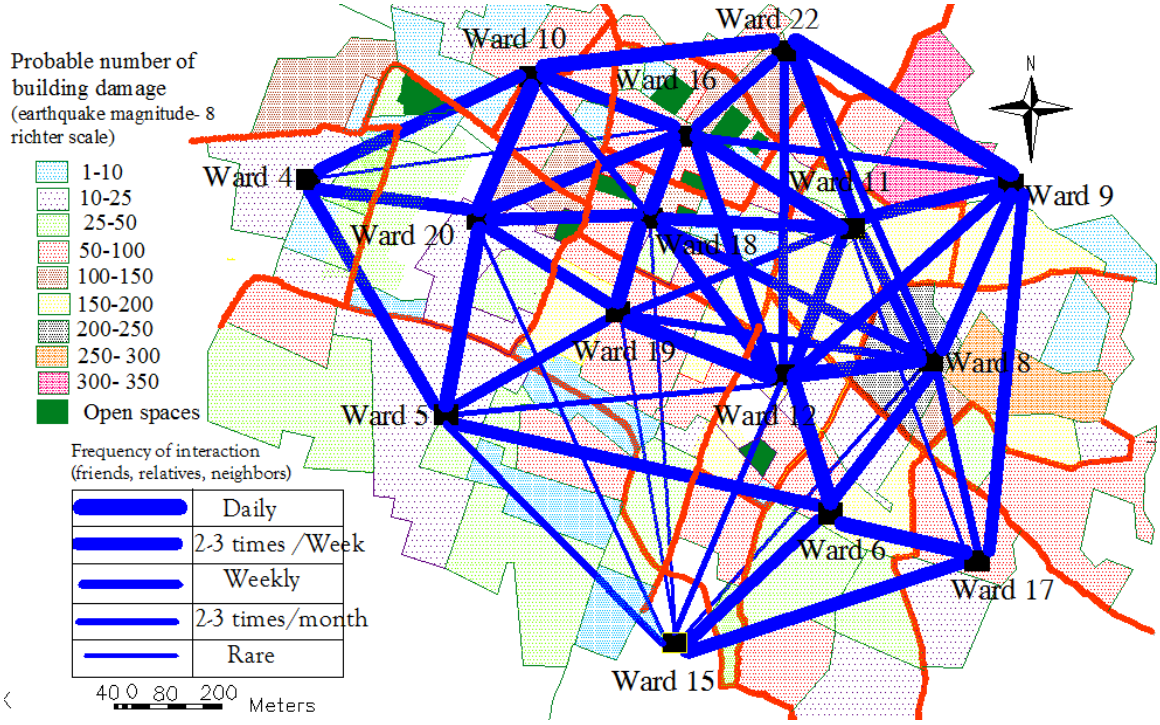



Figure 15: Frequency of interactions during ritual occasions
(Source: Field Survey, Lalitpur City, Kathmandu, 2009; Guragain, 2004)

Furthermore, people in neighborhoods often spend time with and assist senior citizens and disabled people who attend the ritual event, and are highly prone to victimization in disasters. Establishing relationships with the most vulnerable members in a community is extremely important as they desperately need helping hands during the critical hours of a disaster. Apart from this, local organizers usually work in joint collaboration with government officials. A communication network and integrated command structure established between community groups and government is crucial for meeting the pressing needs of the community during disasters and emergencies.

#### 4.6.1.4 Resources

Resources are materials needed by actors to become engaged in RSPs. They include both human and non-human resources. Human resources include physical skills, social and cognitive abilities, the number of participants, and the kinds of relationships that exist between them. Many kinds of non-human resources such as equipment, material items and instruments, physical spaces, and technology are also utilized to facilitate the smooth functioning of the collective event. Public assets related to rituals can enable local people to cope with disasters in a number of different ways. Further analysis of ritual events in Kathmandu helps us better understand how locally available resources can help community members deal with the consequences of such disruptive and dangerous occurrences.

***Disaster Implications:*** Both human and non-human resources are extensively utilized during the ritual event (Fig.16).

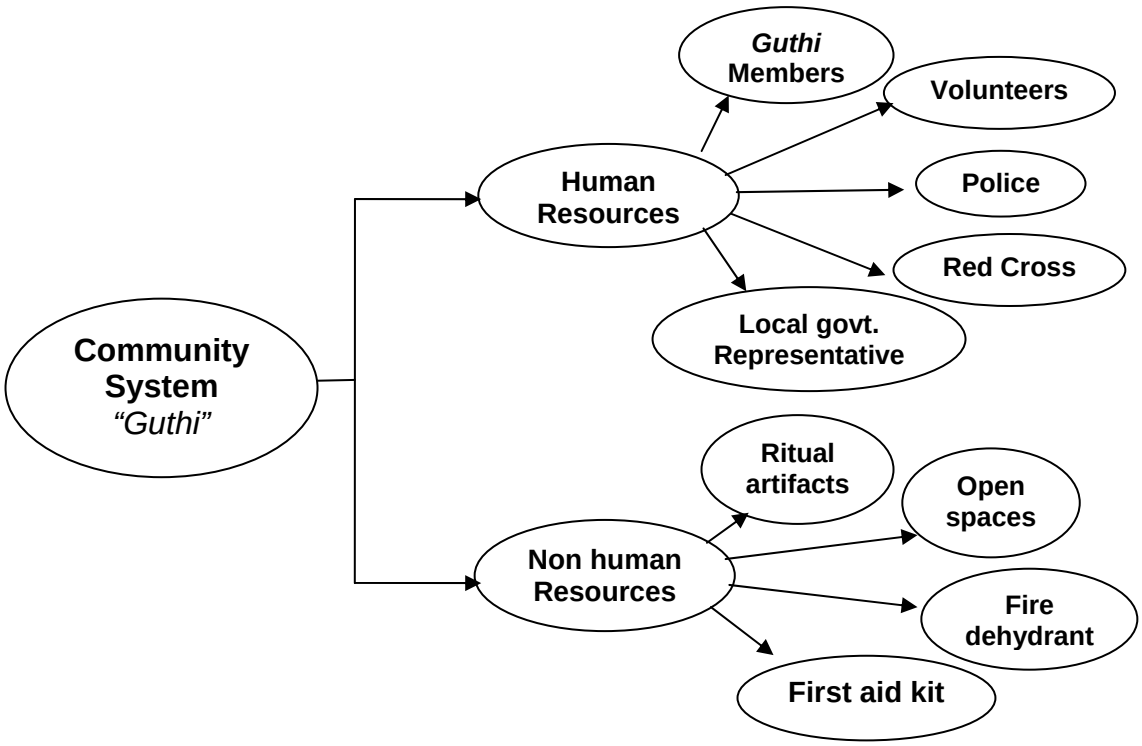



Figure 16: Human and Non human resources utilized during rituals

Residents volunteer at all organizational levels involving the planning and execution of safety measures to ensure the security of the audience. In doing so, the residents must assume proactive roles (in terms of possible developments during the ritual event itself), interacting with each other and sharing their knowledge and resources. The personal and social skills people exhibit during ritual practices along with some of the material items used to stage the ritual event are extremely important resources that can be highly valuable during disasters. For instance, equipment such as large hammers, ropes, and large cooking utensils used during the ritual feast can be used by people during disaster rescue and recovery. All ritual artifacts are stored in *Chapa*[10] which is located at an accessible distance from all neighborhood households. It can be utilized as a community disaster center where essential items can be stored to be used for meeting the needs of people during urgent response efforts in disasters. It also contains a stock of goods such as uncooked food, drinking water, party tents, and other equipment used for the communal feast. These items could be used to meet the basic needs of victims during emergencies.

A ritual event such as this which is a religious gathering of a large magnitude places a huge demand on government resources. A number of essential services are provided such as traffic control, fire safety courses, and hiring technical advisors to provide training for these kinds of activities. The municipal government spends more than half a million Nepali rupees which is the largest amount spent on any annual public event. So too, a large amount of public donations and funds are gathered by local *Guthi* from various corporate sectors. Local organizers report that the funding arrangements have more than doubled over the last ten years to make one of the largest human gatherings in Lalitpur, Kathmandu incident free.

There is a reorganization of traffic routes, pedestrian lanes, and parking lots. Streets and open spaces are cleared out allowing for the unimpeded movement of people to the shrine on holy days. Parking lots are converted into first aid shelters and traffic lanes that are strewn with holy gifts. Volunteers and community organizations are mobilized to clear piles of debris. The capacities of government hospitals are increased and first aid is deployed at this venue. Volunteers are involved in watching over pilgrims, temporary toilets are built at various locations, and make-shift shelters are erected to provide emergency services. Women from households serve drinking water to pilgrims as a part of ritual obligation. As uncertainties are part and parcel of the ritual, local organizers remain alert throughout the event. Hundreds of policemen are deployed to ensure that proceedings are free of any complications. As thousands of devotees pour out on the streets to get a glimpse of the holy chariot, stampedes can occur injuring some people. In certain instances, attendees burst out into drunken revelry and police need to be called in to make arrests. In confronting these uncertainties and challenges in every ritual event, the local community strengthens its organizational capacities which can be extremely useful for coping with the ambiguous and threatening circumstances posed by disasters.

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[10] *Chapa* is a public store house where necessary items for community gatherings such as festivals and feasts are stored. All these items are publicly owned by neighborhoods and used during rituals, marriages, and other social events.

Figure 17 shows the vulnerable buildings and community resources in the core area of Lalitpur city, Kathmandu. Public amenities such as open spaces, ponds, water taps, rest houses and temples are located almost everywhere in the neighborhoods. During ritual processions local residents visit each of these important amenities. The inner city areas are highly vulnerable to earthquakes (JICA, 2002; Guragain, 2004) while lives saving amenities are also available there. The capacities to cope with the disasters depend on how people value and preserve these resources so that they can be crucial to fulfill the collective needs of people when their life is under disaster threat. It is relevant to mention here that rituals are quite significant to preserve these critical resources. First, open spaces exist in the area to fulfill the ritual requirements of the citizens. To a great extent local residents revive their civic sense, and look after open spaces whenever they come together to conduct the rituals. Second, ritual processions are carried out at the heart of Lalitpur where numerous vulnerable built structures and infrastructures are located. Though not in a large scale, people use their limited resources to mitigate the existing vulnerabilities such as widen and maintain the road to move the ritual chariot, and safeguard the exposed electric cables to avoid short-circuit and possible fire. Third, the city administration including police, hospital authorities, fire brigades are activated to maintain safety and security during the ritual occasions. It is also an opportunity for these authorities to check their available human and non human resources and enhance their resource capabilities to better maintain the safety and security in the city. The role of rituals in disaster risk reductions is in a much small scale and integrated with community development activities. Nonetheless, the collaborative ritual practice is significant in terms of motivating people to take care of critical resources. In outlook rituals are similar to catalysts. As soft measures, they have a profound impact on behavior of people in terms of providing surveillance to community resources.

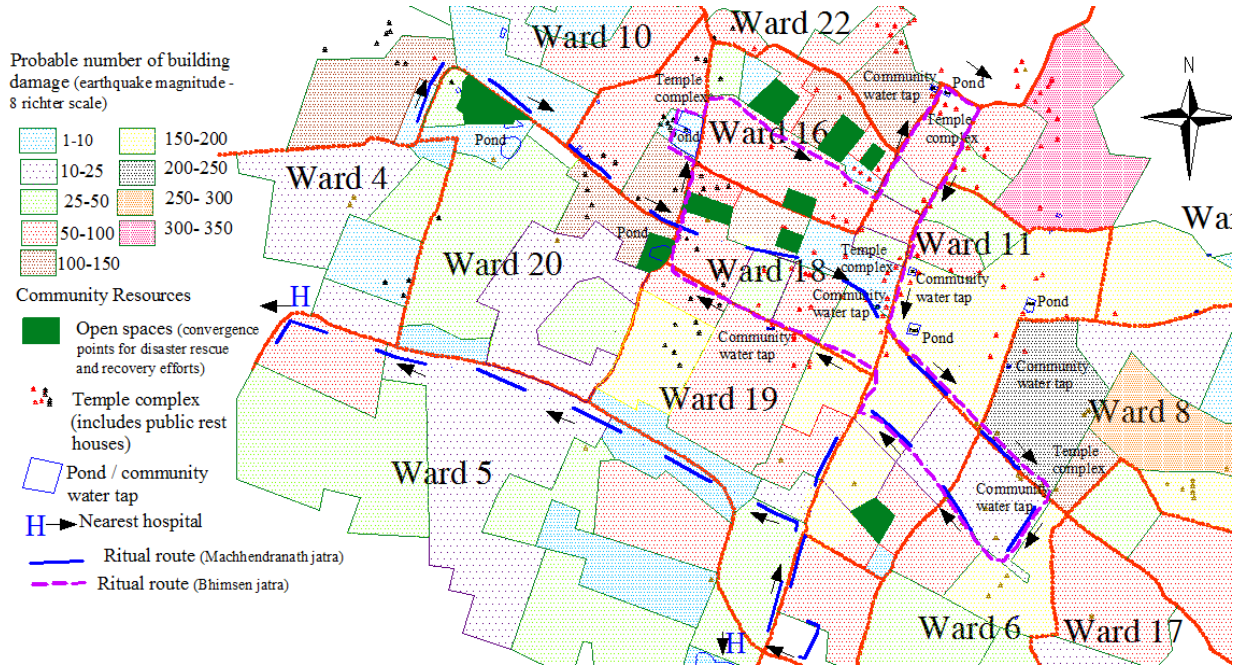


Figure 17: Vulnerable buildings and community resources in Lalitpur City, Kathmandu
(Source: Field Survey, Lalitpur, 2009; Guragain, 2004; KVMP, 2001)

In sum, on the basis of our findings about this ritual event in Kathmandu, we find that these ritual practices enhance the emotional intensity of actors and their commitment to these rituals and the group they are a part of while at the same time helping to overcome the wide array of problems that arise during festive occasions such as these. In terms of the four factors emphasized by SRT, this ritualized practice is an extremely dominant and powerful occurrence within the community profoundly influencing individuals, their social relationships, and the various informal and formal organizations involved in the enactment of this event. The ritualized practice exhibits a high degree of attention, repetition/interactional pace, interdependence among actors, and the use of both human and non-human resources. According to the theoretical framework employed in this study, the high rank or dominant standing of this ritualized practice determined by these four factors indicates its great potential for enhancing the capacity of the community to cope with disaster risk (Fig. 18). In a number of ways participation in the ritual event discussed here (and the wide array of smaller ritualized practices associated with this festival and procession) involves high degrees of all four factors which are also crucial elements and behavioral components of the community's capacity to respond to the dangers, social and organizational breakdown, and cognitive/emotional disturbance created by disasters.

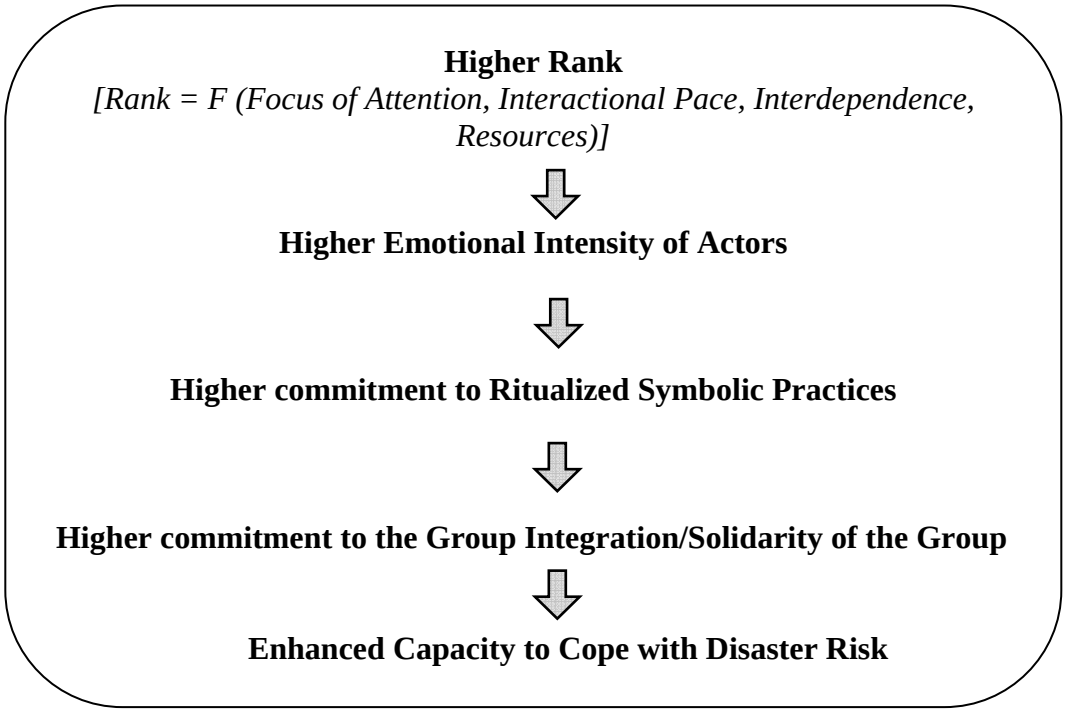


Figure 18: Relationship of SRT factors and capacity to cope with disaster risk.
(Source: Modified from Knottnerus, 2006)

Of course further research involving both qualitative and quantitative methods is called for to more precisely identify how rituals such as these which enhance commitment to and solidarity within a community contribute to the group's enhanced coping capacity for dealing with disasters. Additional empirical analyses examining the ritual dynamics of how communities cope with disaster risk would enhance the robustness of our initial findings and

provide a more in-depth understanding of how such ritual processes operate. Nevertheless, qualitative evidence from this field study clearly indicates that ritual activities can regularly enhance community capacity, and can be of great value for responding to catastrophic events.

## 4.7 Conclusions

Little concern is shown by disaster scholars about the implications of socio-cultural practices such as rituals for pre-disaster planning and social capacity building. This paper attempts to fill this gap by focusing on a quite popular and important ritual event in Kathmandu demonstrating in various ways how ritual enactments can contribute to the disaster risk reduction capacity of this community. Towards this end, SRT has enabled us to analyze RSPs based on four factors: focus of attention, interactional pace, interdependence, and resources. Focus of attention and interactional pace, among other things, facilitate awareness and build a sense of disaster risk among the event's audience. Interdependence of actors helps to create a tight knit social network and strengthen motional intensity among group members which is important for working collectively during a social crisis. In addition, resource mobilization in ritual activities is vital for enhancing the capacity of a group to cope with the various uncertainties and challenges created by disasters.

It is important to note that despite the potential importance of rituals for coping with disaster risk, in some cases rituals (oftentimes of a more traditional nature) are gradually loosing their influence among community members. Modern day developments coupled with increasing migrant populations are slowly degrading indigenous practices that had sustained the local community system in the study area. At this stage, it is very important to preserve ritual based resources such as human skills, ritual artifacts, and community organizations. Rituals and the local community system coexist, so preserving one of them ensures the existence of the other. However, the challenge is to sustain ritual practices in contemporary social life.

We would also emphasize that this investigation of ritual events which are not consciously designed to manage disasters may at first glance seem misguided or of little importance. However, the evidence generated here leads us to conclude that while traditional urban rituals may not be intentionally designed as a risk reduction medium, there are very good reasons to believe that the repeated (annual) participation of city residents in such practices in various city spaces over extended periods of time make them a very effective platform for the social marketing of disaster-related risk reduction measures. Indeed, without such ritual participation, a significant number of people in communities of this type may not be able to maintain their coping capacity against such risks. For this reason, further research will investigate in greater depth the social dynamics of ritual events and their relevance for coping with disaster risk. This work will include the development of quantitative measures for examining SRT's theoretical concepts as they relate to the coping capacity of a society.

On a more practical level there are a number of possibilities concerning how a ritual based social system might facilitate emergency responses within communities. For instance, using the locally accepted existing authority structure of *Guthi* would very likely enhance the speed and efficiency by which decisions are made during an emergency situation. The easy flow of information through the already established channels of communication in Guthi would lead

to much more appropriate emergency actions. Moreover, since it is difficult for local residents to be continually concerned about local risks, some support from the local government for emergency management activities is required. Collaborative efforts between ritual based organizations and community based disaster risk management agencies can be extremely helpful in sustaining risk reduction efforts. Routine pre-disaster training and campaign programs (which both governmental and non-governmental agencies could develop) are vital for maintaining the interest of residents about disaster risk and activating their coping capacity. In the study area, a local NGO has already taken a number of initiatives to raise awareness about earthquakes and potential protective measures. Such efforts would be further enhanced by strategically using the *Guthi* or other ritual based organizations so that an effective community outreach program in disaster risk reduction has the desired impact on local residents. It is such practical and public policy implications that will also be addressed in greater depth in future research.

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# Chapter 5: Analysis of Social Impacts of Urban Rituals on Development of Social Capital and Trust with Potential Linkage to Disaster Resilience; Case Studies from Nepal and Japan

This chapter analyzes the social impacts of urban rituals in terms of developing social capital for building disaster resilient communities. The field survey data of Kishiwada City, Osaka, Japan and Lalitpur City, Nepal are utilized for the study. The literature review on Chapter 2 shows that there is not much research work on social capital for disaster resilience. The ritual cycle can be understood as an adaptive management process and a promising approach to keep up the capacity of a social system to cope with disaster risks. Regularly repeated rituals can be expected to enhance disaster awareness and self reliance through extensive development of networks and social relationships. This chapter uses multiple correlation analysis and Structure Equation Modeling (SEM) in order to assess the role of rituals in building disaster resilience in the case study communities and to make a comparative study of the findings.

Additionally, this chapter elaborates on how rituals help to develop general trust and make people socially intelligent and sensitive to information about trustworthiness of others. Another questionnaire survey is carried out for local residents in Kishiwada City, Osaka to examine their level of general trust and trustworthiness towards others in hypothetical disaster scenarios. A similar study carried out by Yamagishi (2001) shows that people with a higher level of general trust are more sensitive to both positive and negative information about trustworthiness of other person. The study is important to develop risk communication strategies by considering the level of general trust of people.

## 5.1 Case Studies

### 5.1.1 Kishiwada City, Osaka, Japan

Kishiwada city is selected for this study as it is located in a natural hazard prone area with frequent occurrences of disasters such as earthquake, flood, typhoon and tsunami. Since 1940, there are regular occurrences of disasters in an interval of every three years (KCF, 2010).

According to Kishiwada City Office, there are 180 major community organizations (*Chonaikai*) to serve 81,880 households and the total population of 203,371 (KCF, 2010). Each *Chonaikai* is comprised of associations for elderly groups, women's groups, children's groups and hazard protection groups. Besides this, each *Chonaikai* has its own ritual organization to conduct the well known *Danjiri matsuri*. There are twenty-one neighborhoods (*Chonaikai*) participating in the festival. The present study focuses on two school districts namely; Habu Junior High School and Omiya Elementary School. These school districts consist of eleven neighborhoods conducting *Danjiri matsuri.*

Kishiwada City is renowned for an annual ritual event named Danjiri Matsuri (matsuri means a ritual in Japan). Here, people live with the spirit of *Danjiri* and it is a major element to sustain networks and relationships in the community. Every September, over half a million

people witness this spectacular event. On this occasion, twenty-one participating neighborhoods pull the ritual float (*Danjiri*) from their parish shrines. The uniqueness of the event is an assembly of individual neighborhood processions engaged in competitive aesthetic and athletic display (Dylan, 2003). Initially, the ritual processions give a sense of inter-neighborhood rivalry, however, towards the end they combine together to form a huge parade, symbolizing a collective identity and mutual coordination among the participating neighborhoods.

### 5.1.2 Lalitpur, Kathmandu Valley, Nepal

Kathmandu valley is located in a seismic active zone with periodic occurrences of large earthquakes every 75 years. The rapid urbanization and weak built structures are making the area highly vulnerable. An earthquake of magnitude 8.4 Richter scale (similar to 1934 A.D.) can cause more than 40,000 human casualties and huge property loss (NSET and GHI, 1998). Besides this, there is rapid depletion of open spaces which can serve as spaces for rescue and recovery during disasters.

Despite holding these problems, Kathmandu Valley has a huge potential to overcome the impending crisis with the use of its built-in ritual practices and community based organizations involved in the rituals. In Chapter 3, *Machhendranath Rath Jatra* has been described as a mega ritual event involving the participation of the whole Lalitpur city in Kathmandu Valley. The ritual procession moves along the open spaces and major streets of the city with a massive ritual chariot. The notion of urban space conservation is realized through the ritual practice (Gutschow 1979; Gutschow and Bajracharya, 1977; Gutschow and Kolver, 1975). Besides this, the event draws huge numbers of people who share face to face interactions, build acquaintances and share common emotional bonding that can be best utilized to solve social problems. The ritual platform has a scope in terms of disseminating information about public concerns such as disaster risks. Consequently, ritual participation can gradually contribute to build collective awareness and enhance the capacity of communities to overcome the uncertainties related to disaster risks.

## 5.2 Research Hypothesis

We can conceptualize some common facts about the ritual events in Kishiwada and Lalitpur on the basis of their background as described in Chapter 3. They include; community participation and social inclusion; repetition; sharing roles and responsibilities by community people in the built-in social system; social dynamics during rituals and activating community system; spiritual attachment of the residents to the ritual; and the deliberative process of selecting leaders. It can be speculated that each of these factors contribute to the formation and development of social capital (Lin, 2001; Portes, 1998; Putnam, 1993; Geis, 2000; Karner, 2000; Field, 2003; Forrest, 1978 and Woolcock, 1998; 2001).

In order to test the generalisability of these findings this study proposes the first hypothesis:

**Hypothesis 1 –Perceived gain from ritual events has significant relationship with the development of social capital in the communities at Kishiwada and Lalitpur.**

This hypothesis focuses on social impacts of ritual events in terms of building social capital in urban communities of Kishiwada, Japan and Lalitpur, Nepal. In order to test this hypothesis, a multiple correlation analysis is used in this study. This test shows the significance of relationship between the ritual variables (perceived gain and perceived loss from rituals) and the social capital variables (bonding social capital and bridging social capital). The result of the correlation between these variables is used to test the hypothesis and draw a conclusion about the relationship of rituals events and the development of social capital.

As disasters are simply a fact of life, Japan has developed several advanced structural and non structural measures to deal with natural hazards. NGOs and local government have put significant efforts to reduce seismic risks in the case study area of Kathmandu as well. However, the scope of rituals and community based ritual organizations in disaster risk reductions has not been noticed yet.

The ritual based formal and informal associations and networks can be important in mutual assistance during disasters (Dynes, 2005). Every year local people are invigorated with the ritual spirit which renews social bond and relationships that they already possess. In fact, there is a long history in Kishiwada, at the local level, of associations (formal and informal) and networks committed to individual and community welfare that may enhance people's capacity to withstand misfortunes such as disasters. These associations and networks have largely gone unnoticed by disaster professionals who have sought to establish more mono purpose disaster related associations according to their own criteria of what such organization should comprise (Bankoff, 2007). Therefore, they often fail to recognize the existence of other multipurpose ones that don't share the same outward form but may fulfill many of the same functions. This paper attempts to correct this oversight by highlighting the possible role of inbuilt social institutions such as ritual based organization in building the community capacity in a pre-disaster context. With this perspective, this study also proposes the second hypothesis:

**Hypothesis 2 - Social capital built through urban ritual events contributes to enhancing hazard awareness and self reliance of people that helps them to cope with disaster risks.**

The second hypothesis of this study aims to examine the casual relationship between ritual variable (perceived gain from rituals), social capital variables (bonding social capital and trust) and disaster variables (hazard awareness and self reliance). For this, a statistical method of causal analysis is carried out by using the Structural Equation Modeling (SEM). The following section explains in detail the research framework adopted to test the proposed hypotheses of this study.

## 5.3 Research Framework

### 5.3.1 Design and Procedure

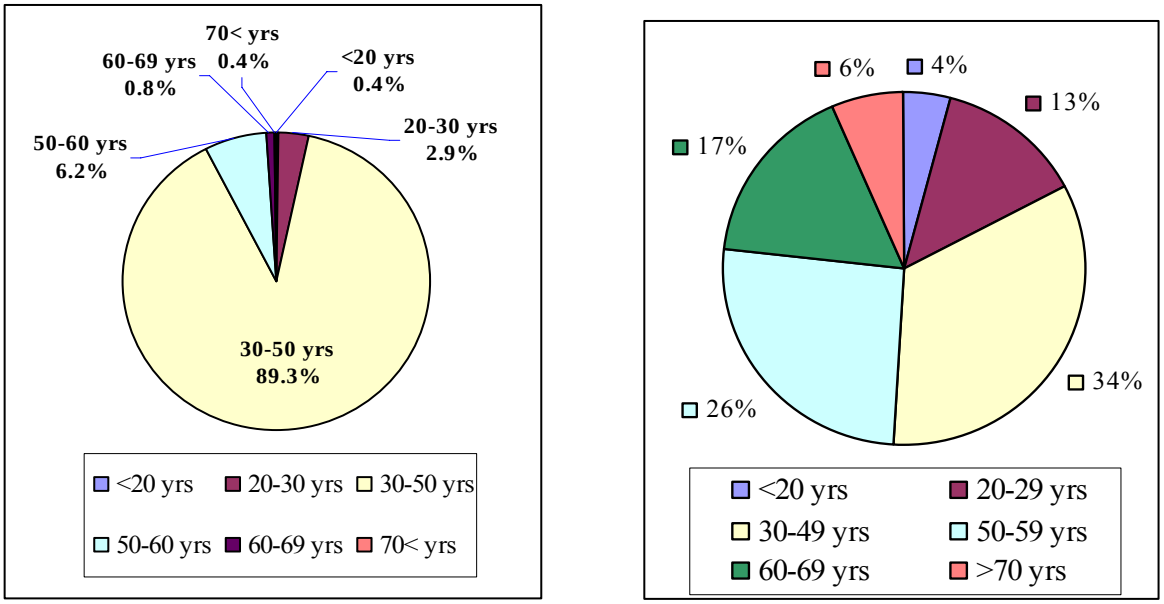
This study aims to investigate first the statistical relationship between perceived gain from ritual events and the development of social capital. Later, it examines the casual relationship

between perceived gains from urban ritual events, social capital and disaster resilience of communities. Disaster resilience is understood in terms of building social capacity in a pre-disaster context to cope with uncertainties and crisis that can be caused by disasters. It is conceptualized in terms of building hazard awareness and making local residents more self-reliant to cope with disaster risks. The social capital variables considered for this study are bonding social capital, bridging social capital and trust. A detailed explanation of social capital variables has been made in Chapter 3.

In Kishiwada City, a questionnaire survey was conducted in two different school districts namely; *Habucho* junior high school and *Omiya* elementary school. Questionnaires were sent through school children to their respective parents living in Kishiwada. They were distributed in a booklet form, informing participants about the research aims. It was assured that the survey data would be only analyzed for academic purpose. Overall 1400 questionnaires were distributed with 700 questionnaires on each school district. 485 completed responses were returned, with an overall corresponding rate of 36.4 percent. This survey didn't intend to compare the heterogeneity between areas, as our analytic focus was on community as a whole rather than individual area.

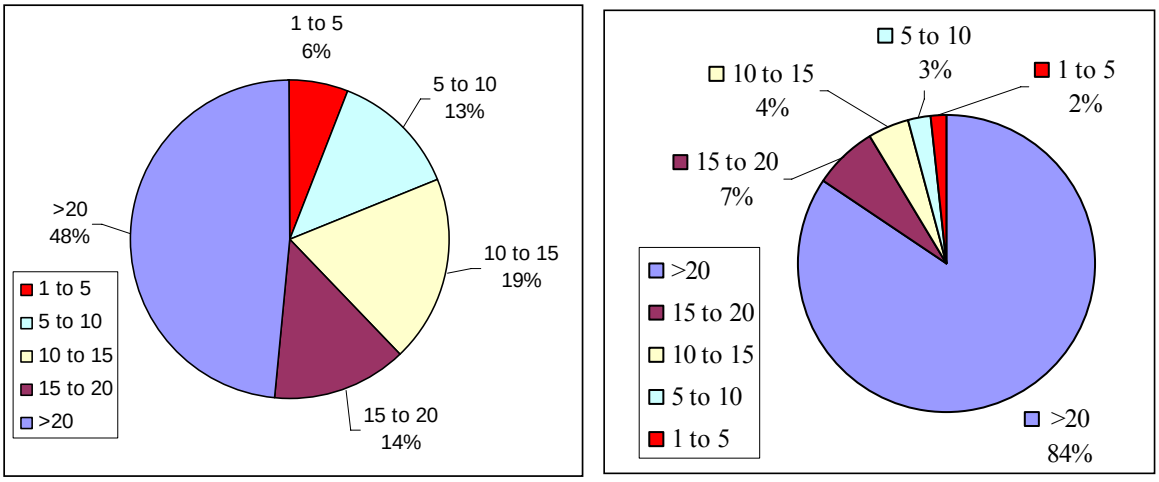
A household questionnaire survey was conducted in Lalitpur by the researcher and his three assistants. Almost 250 complete responses were collected during the entire period of household survey which lasted for a month in February, 2010. The face to face interaction provided an opportunity to explain the questionnaire survey sheets to the respondents and clear doubts about them. It turned out to be a two way learning exercise for both the researcher and the local people. However, in case of Kishiwada the sealed questionnaire sheets were sent to the respondents and no face to face interactions were made.

### 5.3.2 Sample



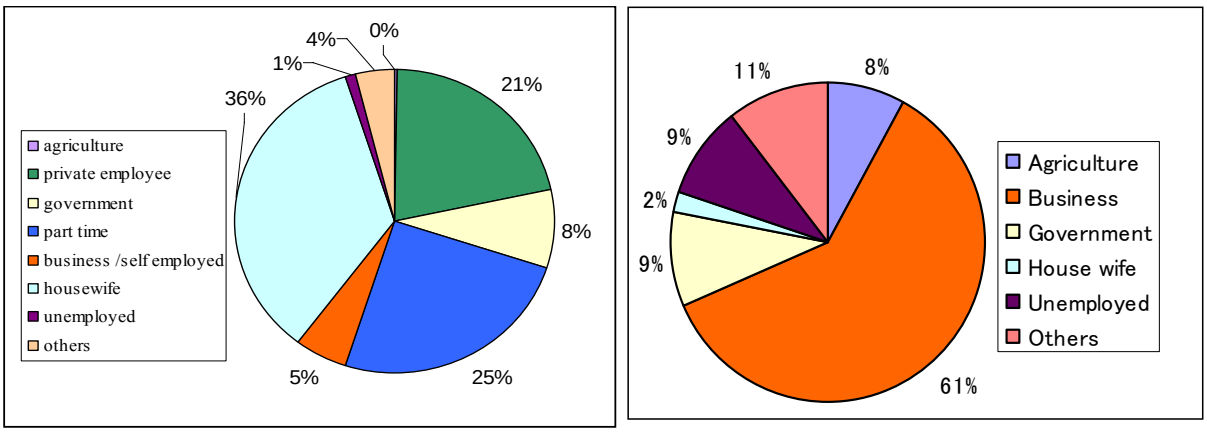

Kishiwada City, Osaka Lalitpur, Kathmandu Valley

Figure 19: Age Group of Respondents
(Source; Field Survey, 2009)




Kishiwada City, Osaka Lalitpur, Kathmandu Valley

Figure 20: Length of Stay in the Area (No. of Years)
(Source; Field Survey, 2009)




Kishiwada City, Osaka Lalitpur, Kathmandu Valley

Figure 21: Occupation
(Source; Field Survey, 2009)

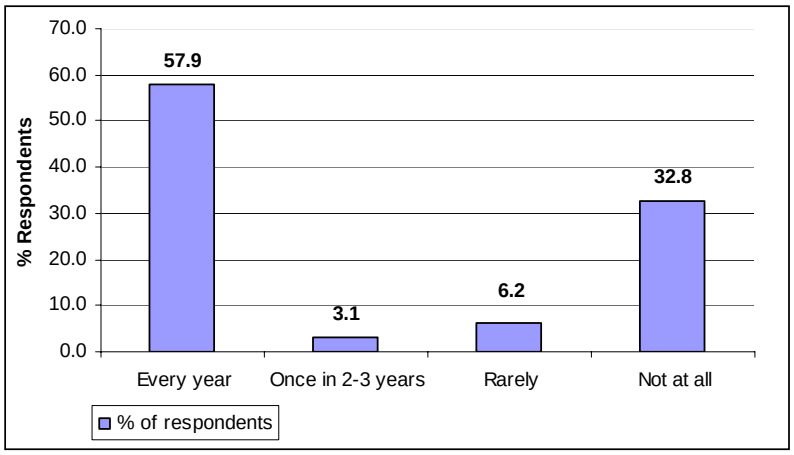



Figure 22: Frequency of Ritual Participation, Kishiwada City, Osaka
(Source; Field Survey, 2009)

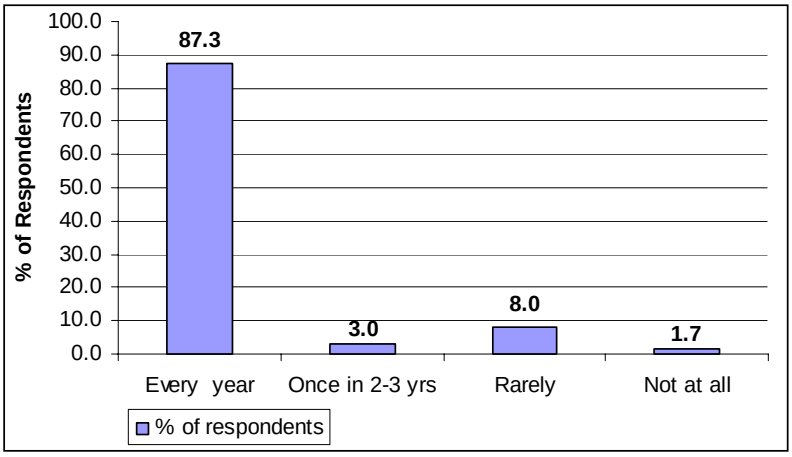



Figure 23: Frequency of Ritual Participation, Lalitpur, Kathmandu Valley
(Source; Field Survey, 2009)

## Kishiwada City, Osaka, Japan

Respondents were all from the two school districts in Kishiwada city. Demographic characteristics of the respondents were as follows: gender (female = 83.3 percent; male= 16.7 percent); age ( <20 years = 0.4 percent; 20-29 years= 2.9 percent; 30-49 years = 89.3 percent; 50-59 years = 6.2 percent; 60-69 years = 0.8 percent and > 70 years = 0.4 percent); length of stay in the area ( > 20 years = 48 percent; 15 to 20 years = 14 percent ; 10 to 15 years = 19 percent; 5 to 10 years = 13 percent; 1 to 5 years = 5 percent and <1 year = 1 percent);

occupation (house wife = 35 percent ; private institutions= 28 percent; part time job holders = 26 percent ;government = 9 percent; and unemployed / retired person = 2 percent); and frequency of participation in the ritual event (every year = 57.9 percent; once in 2-3 years = 3.1 percent; rarely = 6.2 percent and not at all = 32.8 percent) (Refer Figs. 19,20,21 and 22).

**Lalitpur, Kathmandu Valley, Nepal**

In Lalitpur City, respondents were randomly selected from inner city areas in Wards 5, 6,7,8,11,12,16,18,19,20,21and 22. It included 73 percent male respondents and 27 percent female respondents; age (( <20 years = 4 percent; 20-29 years= 13 percent; 30-49 years = 34 percent; 50-59 years = 26 percent; 60-69 years = 17 percent and > 70 years = 6 percent); length of stay in the area ( > 20 years = 84 percent; 15 to 20 years = 7 percent ; 10 to 15 years = 4 percent; 5 to 10 years = 3 percent; 1 to 5 years = 2 percent and <1 year = none); occupation (house wife = 2 percent ; business= 61 percent; government = 9 percent ; unemployed = 9 percent ; and others = 11 percent); and frequency of participation in the ritual event (every year = 87.3 percent; once in 2-3 years = 3 percent; rarely = 8 percent and not at all = 1.7 percent) (Refer Figs. 19,20,21 and 23).

### 5.3.3 Measures

The questionnaire survey was comprised of Likert scales. The responses to the perceived gain from the rituals were recorded by using sample items such as: it helps to get much closer with people in the community; it helps to build a sense of community; and it helps to understand the local culture. Perceived loss was recorded in terms of disturbances to daily activities, increase in household expenses, crowd and chaos during the rituals. Hazard awareness was measured by using sample items such as: frequency of talking with neighbors about disaster related matters; and familiarity with the city hazard map.

The sample items for bonding social capital, bridging social capital and trust were developed by referring to the World Bank list of questionnaires (Grootaert et al., 2004). Bonding social capital focused within a community and sample items include: level of interaction respondents have with their neighbors; number of people in the neighborhood that respondents can interact with; and frequency of greeting or talking with neighbors. Bridging social capital covered networks outside a community and sample items include: frequency of participation in sports groups, religious groups and civic groups such as rotary club, Red Cross, Non Government Organizations and volunteer groups. Sample items for trust include: how one trust most people in his/her neighborhood; most people in this neighborhood are willing to help if one need it; and, in this neighborhood one has to be alert or someone is likely to take advantage of him/her.

In addition, responses to self reliance were recorded by using sample items such as: in one's opinion, who is responsible for handling supplies such as drinking water or food during disaster; and in his/her opinion who is responsible for making evacuation decisions during disasters. All the items listed above showed a high internal consistency (Cronbach $\alpha$ = >0.7).

## 5.4 Findings and Analysis

**Multiple Correlation Analysis - Kishiwada City, Osaka**

As shown in Table 3, multiple correlation analysis indicated that perceived gain from the rituals is positively correlated with trust ($r = 0.28$, $p<0.01$). And trust is positively correlated with bonding social capital ($r= 0.441$, $p < 0.01$) and bridging social capital ($r= 0.168$, $p < 0.01$). In the mean time, trust is negatively correlated with perceived loss from the rituals ($r = -0.193$, $p<0.01$).

Table 3: Multiple correlation analysis of ritual, social capital and disaster variables

| | **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |
|---|---|---|---|---|---|---|---|---|
| **1. Trust** | **.280**** | **-.193**** | -.012 | **.173**** | **.168**** | **.441**** | **.240**** | 1 |
| **2. Hazard Awareness** | **.147*** | .048 | -.012 | -.004 | **.210**** | **.254**** | | |
| **3. Bonding Social Capital** | .116 | .038 | .035 | .042 | **.390**** | | | |
| **4. Bridging Social Capital** | .104 | -.059 | .073 | .033 | | | | |
| **5. Self Reliance** | .044 | .005 | -.085 | | | | | |
| **6. Frequency of Participation** | .051 | **-.125*** | | | | | | |
| **7. Perceived Loss** | **-.263**** | | | | | | | |
| **8. Perceived Gain** | 1 | | | | | | | |

Pearson's r; *Correlation significant at 0.05 level (2-tailed).
**Correlation significant at 0.01 level (2-tailed).

All this explains that people perceiving gain from participating in the rituals tend to develop trust among each other. Trust being an important component of social capital, it can be claimed that our Hypothesis 1 that perceived gain from ritual events has significant relationship with the development of social capital is supported.

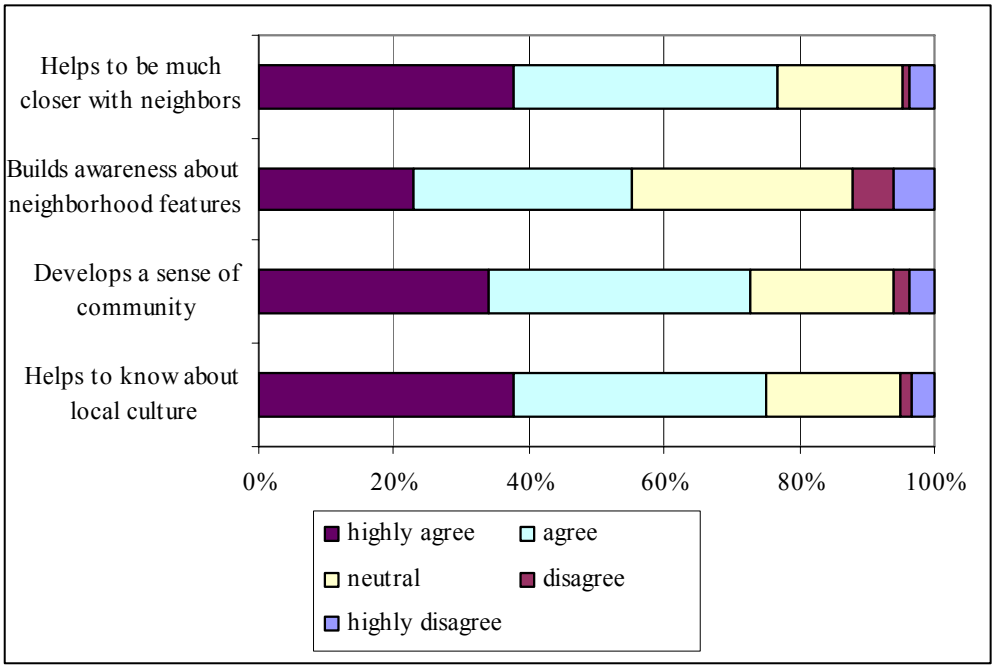



Figure 24: Perceived gain from participating in ritual events
(Source; Field Survey, 2009)

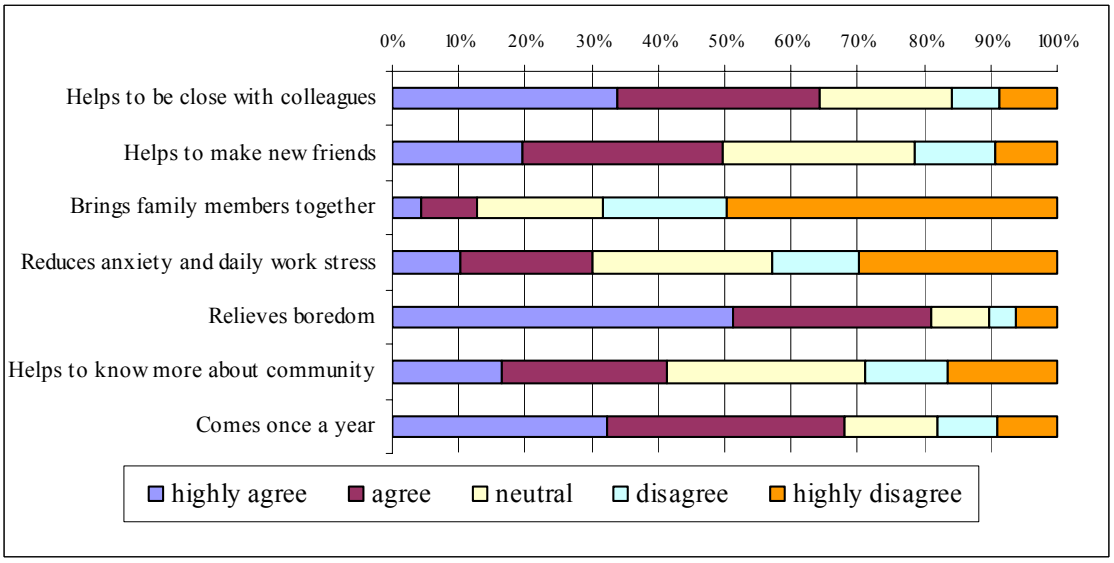



Figure 25: Motivations for Participating in Rituals
(Source; Field Survey, 2009)

The responses about the perceived gain of rituals are shown in Fig.24. It is found that nearly 40 percent of respondents highly agree that rituals help them to be much closer with the neighbors, develops a sense of community and helps to know about local culture. This

finding supports that rituals have a significant relationship to the development of social capital by creating social bonds.

The results of multiple correlation analysis in Table 3 depict a positive correlation between bonding social capital, bridging social capital and trust. It indicates that networks and relationships both within the community and with organizations outside the community are important to build trust in the case of Kishiwada. The findings show no significant correlation between perceived gain from the rituals, bonding social capital and bridging social capital which contradicts with our assumption. It indicates that in Kishiwada other formal and informal associations apart from the rituals must have also helped in the development of bonding social capital and bridging social capital. While, the positive correlation between perceived gain from rituals and trust supports that rituals have significant relationship with the development of social capital.

The findings in Table 3 do not show a significant correlation between frequency of participation in ritual events, social capital and disaster variables. These findings are meaningful in several respects. To begin with, only being a passive participant in the ritual event is not necessarily important in terms of building social capital. Instead, how one gets involved and the personal attitude towards the event are important. It is true that every participant mayn't share the same ritual spirit. Those who perceive benefit from the event and get actively involved to carry out ritual task can obviously develop social networks and trust which are key components of social capital. Also, the lack of significant correlation between frequency of participation and disaster related variables (hazard awareness, self reliance) can be explained by the fact that merely participating in rituals can not make a person familiar with disasters as rituals are not organized as apparent disaster drills. The relationship between rituals and disaster risk reduction is latent and this study hypothesizes that rituals develop social capital which helps to enhance disaster resilience.

Besides this, the results in Table 3 also show a negative correlation between frequency of participation and perceived loss from the ritual event ($r = -0.125$, $p < 0.05$). It indicates that people who participate quite often perceive less loss from the event. It might be because people learn about the significance of the event over time with regular participation.

The findings in Table 3 also reveal that hazard awareness is positively correlated with bonding social capital ($r = 0.254$, $p<0.01$), bridging social capital ($r = 0.21$, $p<0.01$), trust ($r = 0.24$, $p<0.01$) and perceived gain from the ritual ($r = 0.147$, $p< 0.05$). Self reliance is positively correlated with trust ($r = 0.173$, $p<0.01$). It reveals that increase in social capital variables such as bonding social capital, bridging social capital and trust increases the hazard awareness and vice versa. Self reliance increases when trust increases and the latter in turn increases with both bonding and bridging social capital.

**Structural Equation Modeling (SEM) - Kishiwada City, Osaka**

The multiple correlation analysis does not clearly identify how each social capital variable contributes to the development of hazard awareness and self reliance. For the shake of analytic validity and to show the path of linkages between variables, Structural Equation Modeling (Bryan, 2001; Ullman, 2001) was performed with self-reliance as the dependent

variable (Fig. 26). In this study, resilience is understood in terms of enhanced self-reliance. SEM indicated a linear path of linkage from other variables to self reliance.

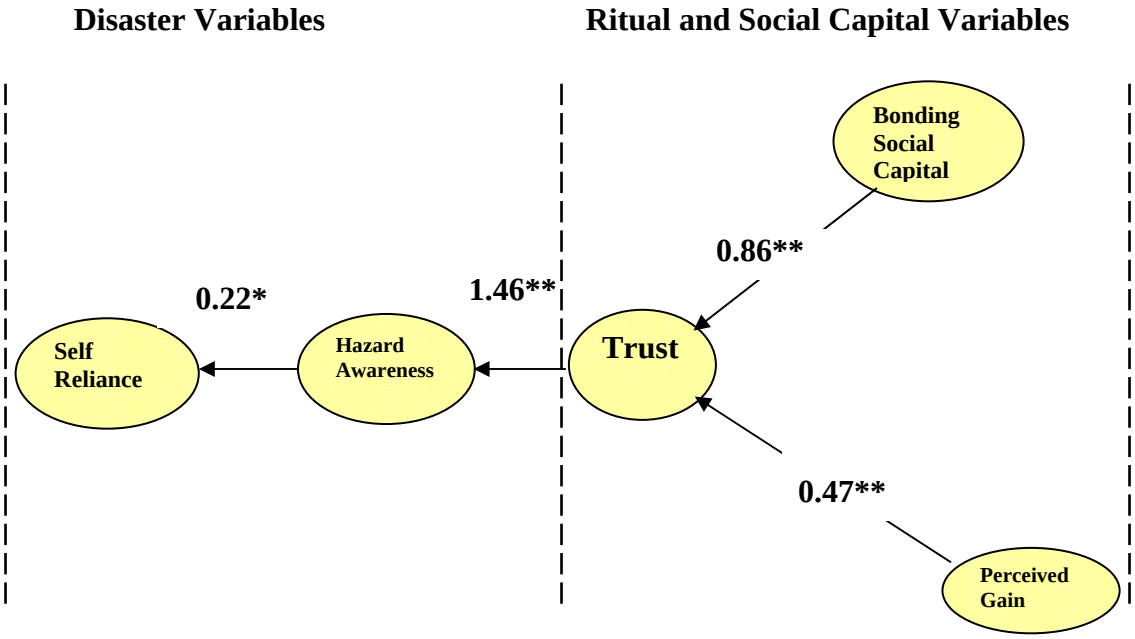



Figure 26 : Structural Equation Modeling
(* Significant at 0.05, ** Significant at 0.001)

The path is from trust to hazard awareness and self-reliance. Trust is predicted by both bonding social capital and perceived gain from rituals. It is revealed that increase in trust results in an increase in hazard awareness and self reliance in the community at Kishiwada. The main conclusion of the model is that we can change the level of self reliance by manipulating the predictor variables. For example, by changes in one standard deviation of the predictor variable (hazard awareness) will result in twenty two percent changes in the standard deviation of the target variable (self reliance). It is important to notice that bonding social capital, perceived gain from rituals and awareness is contributing to self reliance. In order to enhance community resilience in Kishiwada, trust built through ritual participation and social bonds at neighborhood level are important.

The Goodness-of-Fit statistics for the model are: ($x^2$ = 106.3, D.F. = 89, p = 0.101), Root Mean Square Error (RMSEA) = 0.02, GFI = 0.951, NFI = 0.897. In general, the model accounts for 5% of the variance in self reliance for natural hazards such as earthquakes. The p value of 0.101 indicates that the estimated model is a close fit to the data and the difference between the actual and estimated model is non-significant. The estimated results confirm the validity of the model as a predictor of self reliance in case of disasters.

In view of these findings, we can support Hypothesis 2 that social capital built through rituals helps to enhance hazard awareness and self reliance of people in Kishiwada.

**Multiple Correlation Analysis - Lalitpur, Kathmandu Valley**

The multiple correlation analysis (Table 4) indicates that perceived gain from the rituals is positively correlated with trust ($r = 0.284$, $p<0.01$) and trust is positively correlated with bonding social capital ($r = 0.302$, $p < 0.01$). In the mean time, trust is negatively correlated with perceived loss from the rituals ($r = - 0.138$, $p <0.01$).

Table 4: Multiple correlation analysis of ritual, social capital and disaster variables

| | **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** |
|---|---|---|---|---|---|---|---|---|
| **1. Trust** | **.284**** | **-.138**** | 0.083 | 0.06 | 0.081 | **.302**** | .116 | 1 |
| **2. Hazard Awareness** | .063 | **-.140**** | **.136**** | -.125 | **.288**** | **.240**** | 1.0 | |
| **3. Bonding Social Capital** | **.178**** | .019 | **.152*** | **-.133*** | **.382**** | 1.0 | | |
| **4. Bridging Social Capital** | .101 | .01 | .021 | -.103 | 1.0 | | | |
| **5. Self Reliance** | .095 | -.078 | .019 | 1.0 | | | | |
| **6. Frequency of Participation** | .078 | **.203**** | 1.0 | | | | | |
| **7. Perceived Loss** | -.082 | 1.0 | | | | | | |
| **8. Perceived Gain** | 1.0 | | | | | | | |

Pearson's r; *Correlation significant at 0.05 level (2-tailed).
**Correlation significant at 0.01 level (2-tailed).

The data shows that in Lalitpur City, Kathmandu, people perceiving gain from participating in rituals tend to develop trust among each other. In our definition of social capital, trust has been treated as an important component of social capital along with social networks. On the basis of our findings from the field study, it can be claimed that our Hypothesis 1 that perceived gain from rituals has significant relationship with the development of social capital is supported.

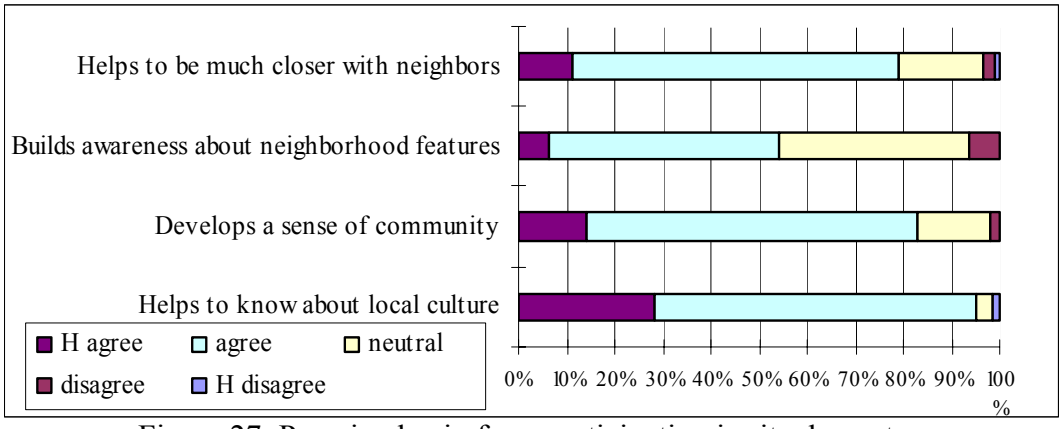



Figure 27: Perceived gain from participating in ritual events

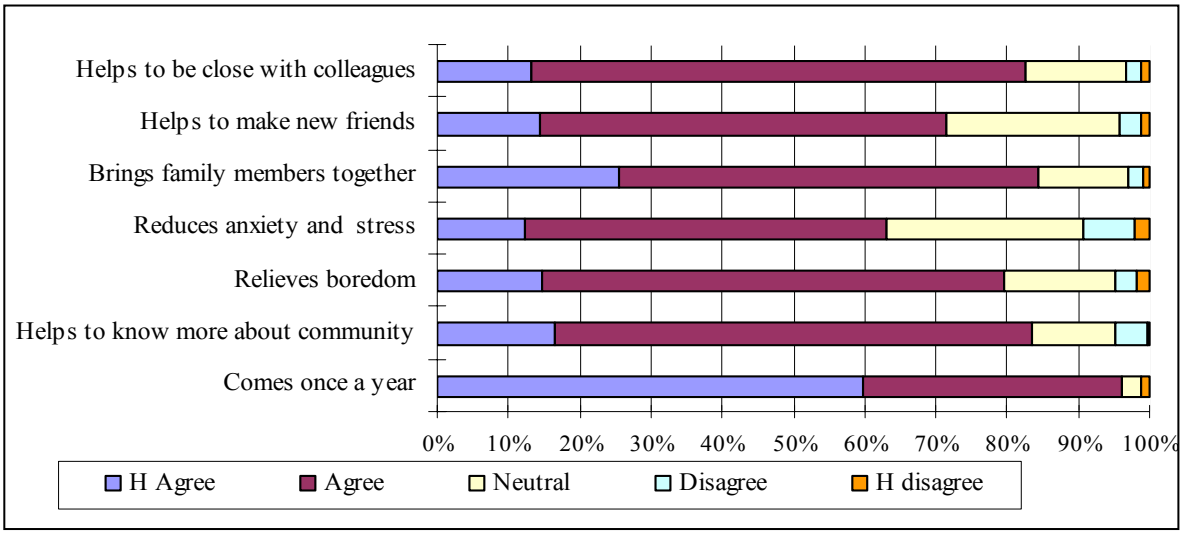



Figure 28 : Motivations for Participating in Rituals

As shown in Fig. 27, only around ten percent of respondents highly agree that rituals help them to be much closer with the neighbors; nearly fifteen percent highly agree that it develops a sense of community; and around seven percent highly agree that it helps to know about local culture. The percent of highly agreeing respondents are much lower compared to the case of Kishiwada City, Osaka. However, large percent of respondents agree that rituals develop a sense of commuity and help them to be much closer with the neighbors. Similarly, Fig 28 also shows that a large number of respondents are motivated to participate in rituals in order to be close with colleagues, make new friends and know more about one's community. It indicates that rituals help to develop a social network which is an important component of social capital.

The result of multiple correlation analysis in Table 4 shows a significant positive correlation between bonding social capital and trust. The findings also show a significant positive correlation between perceived gain from urban ritual events and bonding social capital. While the correlation between bridging social capital and trust is not statistically significant. It shows that social networks among people within a community help to develop trust in Lalitpur.

The findings in Table 4 show a significant positive correlation between frequency of participation and perceived loss from ritual events. Unlike in Kishiwada, people in Lalitpur do not have a positive attitude towards rituals. Either they participate due to some compelling religious reasons or just due to fear of societal exclusions. The increased expenses and environmental disturbances from rituals seem to decrease people's interest towards rituals.

There is significant positive correlation between frequency of participation and hazard awareness in Lalitpur. It shows that people who participate quite often in rituals tend to learn about existing hazards in the locality. Ritual processions provide a platform for community people to observe the neighborhood environment and discuss about hazards that exist in the locality. In order to understand the indirect relationship between rituals and disaster risk

reductions, this study hypothesizes that social capital developed by participation in urban ritual events contributes in the enhancement of community disaster resilience.

The findings in Table 4 reveal that hazard awareness is positively correlated with bonding social capital ($r = 0.24$, $p<0.01$) and bridging social capital ($r = 0.288$, $p<0.01$). It supports our earlier findings that people tend to be aware about hazards in their locality by participating in urban ritual events. It reveals that social capital variables (bonding social capital and bridging social capital) are significantly correlated with hazard awareness.

**Structural Equation Modeling (SEM) - Lalitpur, Kathmandu Valley**

The multiple correlation analysis gives some insight about relationship among variables but it does not clearly identify the direction of linkages among each social capital variables, hazard awareness and self reliance. For the shake of analytic validity and to show the path of linkages between variables, Structural Equation Modeling (SEM) was performed with hazard awareness as the dependent variable (Fig. 29). In the case study of Kishiwada, social capital and ritual variables showed casual linakges to hazard awareness and self reliance. But, in Lalitpur the linkage is between bonding social capital, bridging social capital and hazard awareness. Unlike in Kishiwada, trust does not show a casual linkage with hazard awareness.

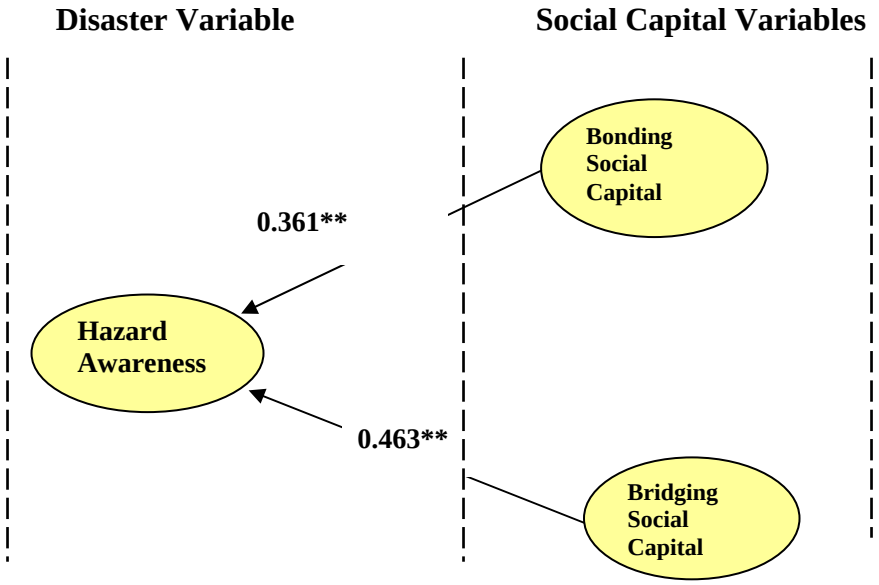



Figure 29: Structural Equation Modeling
** Significant at 0.01

The Goodness-of-Fit statistics for the model are: ($x^2 = 23.2$, D.F. = 12, p = 0. 026), RMSEA = 0.06, GFI = 0.978, NFI = 0.93). The p value of 0.026 is below the minimum value of 0.05 and based on this the prediction of casual linkages made by the model is not so strong. However, this is the model that fits the data to the closest and gives some indication on casual linkage between social capital variables and hazard awareness.

In view of these findings, we can partly support our Hypothesis 2 which states that social capital built through rituals helps to enhance the hazard awareness. However, bonding social capital and bridging social capital do not build self reliance of people in Lalitpur, Nepal.

## 5.5 Comparative Analysis of Nepal and Japan

**Japan**

- Bonding Social Capital (BoSc) and Perceived Gain from Rituals (PG) help to build Trust (T) in Kishiwada City, Japan which in turn is important for Hazard Awareness (HA) and Self Reliance (SR) of people. (Fig. 26)

- Perceived loss from rituals shows a negative significant correlation with the frequency of participation in rituals in the study area of Japan (Table 3).

- The findings show that in general, people in Japan have a positive attitude towards rituals.

- In Structural Equation Modeling of survey data in Japan, Bridging Social Capital (BrSc) is not contributing to the development of disaster related variables. However, BrSc is important in many cases when commuity resources alone are not sufficient to cope with disasters and a wider regional support is required. To this end, rituals can help to promote inter- community and inter-organizational networks because it can serve as a platform of participation for various sectors in a region and foster the Bridging Social Capital (BrSc).

**Nepal**

- SEM of survey data in Nepal shows that BoSc and BrSc contribute to the development of Hazard Awareness (HA) (Fig.29).

- Perceived loss from rituals shows a positive significant correlation with frequency of participation in rituals in the study area of Nepal (Table 4).

- The findings show that in general, people do not have a positive attitude towards rituals in Nepal. However, during informal interviews elder people tend to be optimistic about the ritual events while most of the teenagers are dissatisfied with the ritual events.

- BoSc and HA show a significant positive correlation with the frequency of participation in rituals of Nepal (Table 4). It indicates that respondents in Nepal become aware about local hazards by participating in ritual processions.

- The findings in Nepal show that BoSc has a significant negative correlation with Self Reliance (Table 4). It indicates that stronger social networks developed within a commuity in Nepal tend to decrease self reliance of people. In other words, people tend to be more dependent on community authorities rather than realizing that individuals are more responsible to cope with disasters.

## 5.6 Discussions

This study examines the impact of ritual based social capital on disaster awareness and self reliance. It reveals different scenarios in the two different case study areas. In Kishiwada the findings show two interesting points: a) perceived gain from the ritual event has significant positive correlation with the development of trust b) SEM shows that disaster resilience interpreted in terms of self reliance and hazard awareness was predicted by trust, and trust in turn was predicted by perceived gain from rituals and bonding social capital. This study suggests that disaster resilience is based on social capital and social events such as rituals play a significant role in building community resilience. In Lalitpur, hazard awareness is predicted by BoSc and BrSc. But, self reliance is not associated with the social capital variables. Instead, BoSc is negatively correlated with Self Reliance indicating that people believe public authorities to be more responsible to cope with disaster situations.

In an informal interaction, local residents both in Lalitpur and Kishiwada show a mixed response about rituals. Some respondents are found positive about rituals as they regard it as a fun and get together event. While, others seem to be pessimistic and reveal that Danjiri often invites stampede. Despite these facts, in order to upkeep the resilience of the community policy measures must focus on preserving and promoting ritual practices.

Local people can make use of ritual infrastructure to cope with disaster risk. For instance, ritual store houses can serve as community disaster centers where first aid boxes and other essential items can be stored for compelling immediate needs during response efforts in disasters. Open spaces where people gather during the rituals can serve as convergence points after initial evacuation, and also provide space for medical assistance and rescue in disasters.

The relationship found between perceived gain from rituals, trust and disaster resilience in Kishiwada supports the view that more people work together under the ritual organization of *Chonaikai*, the more they build trust among each other and towards the institution. The more they trust the organization, more likely they try to seek information from this source and use it to formulate their own disaster plans making them more self reliant.
A major influence of social capital in enhancing disaster resilience is investigated through this study in a ritual based community of Japan and Nepal. Our study suggests that it is important to understand the significance of cultural elements such as rituals in building social capital. The findings suggest that social organizations involved in conducting ritual events are viable sources to communicate disaster risk information to the public.

## 5.7 Implications and Limitations

The aforementioned analysis in this study suffered from generalisability of the findings. To begin with, it didn't consider how community utilizes its social capital at the time of disaster. As the occurrences of natural disaster are unpredictable, one can't be certain whether the built-in social capital functions as expected in such uncertainties. If baseline data on pre-disaster and post-disaster comparative analysis were available, a more convincing evidence of the use of social capital can be obtained in the case of natural disasters. Though this investigation is a significant step forward, an in-depth study on ritual based social capital during disasters in study areas await further research.

Second, before pursuing a linkage between ritual event and social capital as presented in this study one needs to be cautious. There are other events beside ritual which must have contributed to the development of social capital. Ritual has been treated as one of the factors that helped build up social capital which enhances disaster resilience of the community.

Third, in the study area of Kishiwada there were a large number of female respondents (about eighty three percent) as compared to male (seventeen percent). Also, thirty five percent of the respondents were housewives. As women are not the main decision makers in a representative Japanese family their response may not necessarily include the opinion of the household. Besides this, the heterogeneity of respondents has been ignored in this study.

There are a number of possibilities where a ritual based organization might be a viable base for all stages of emergency action.

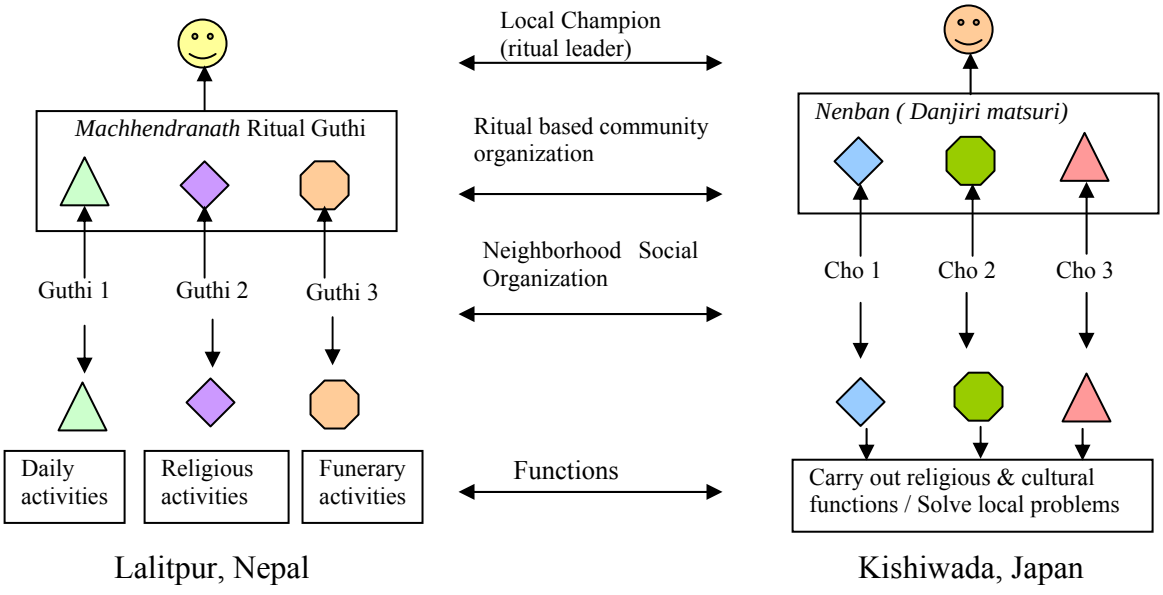



Figure 30 : Conceptual layout of Social Organizations in communities of Nepal and Japan.

As shown in Fig. 30, ritual based community organization in Lalitpur, Nepal comprises of various *Guthis* or neighborhood level social organizations with their respective funtions in day to day life of people. The *Guthi* functions vary from solving day to day neighborhood problems, carrying out daily rituals and support neighborhood members in funerals. These various *Guthis* become proactive to conduct Machhendrnath ritual with their respective tasks allocated by the head of ritual based community organization. Similarly, in Kishiwada City Japan, various *Chonaikais* or neighborhood level social organizations get proactive to conduct *Danjiri Matsuri* with their respective functions and under the guidance of ritual leader or the local champion.Using these locally accepted existing authority structure of *Chonaikai* in Japan and *Guthi* in Nepal can help in speeding up the decisions during an emergency situation (Bhandari et al., 2010). Easy flow of information through the already established channels of communication in these social institutions can lead to appropriate emergency action. Leaders of ritual based organizations who are highly respected and trusted by local people can play the role of facilitators for community risk reduction efforts.

Since it is difficult for local residents to continuously show their concern for local risk, some support from local government for emergency management activities is also required. Collaborative efforts between ritual based organizations and community based disaster risk management organizations can be equally helpful in sustaining risk reduction efforts and activating the coping capacity of people. In the study areas, initiative has already been taken by community based disaster management organizations which can be further enhanced by strategically using the ritual based organizations under *Chonaikai* and *Guthi*.

It can be argued that ritual focuses more on a group and makes an individual more community dependent even on issues that they can handle independently. Decision making in a group may take a long time which is not favorable in emergency cases when one has to be quick to make decisions and act on his/ her own. However, it can not be ignored that social capital built through communal practices can contribute to the dissemination of disaster information. The higher trust on information from friends, relatives and close neighbors can contribute to the development of awareness and builds individual capacity.

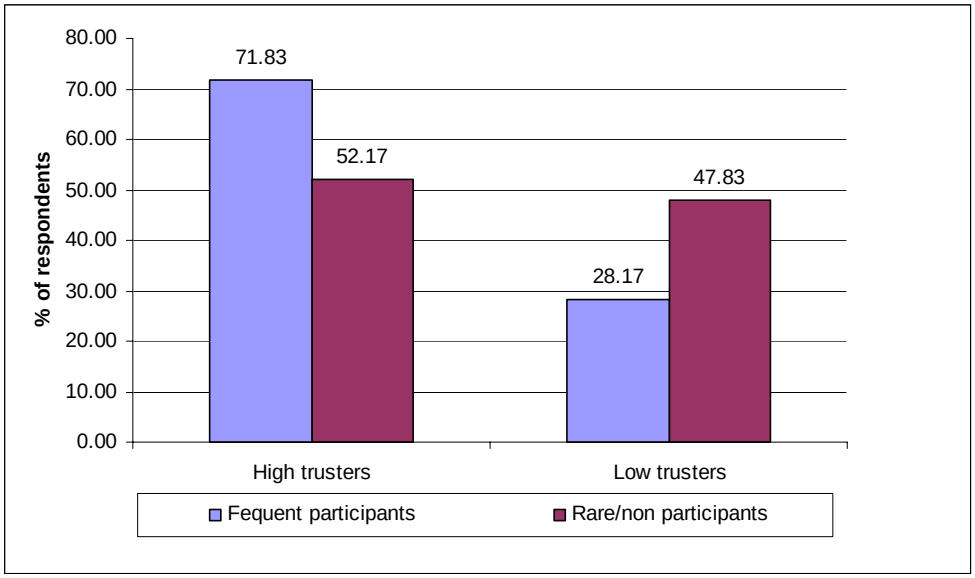
From the findings of our study in Nepal and Japan, we came to know that perceived gain from rituals and trust has significant positive correlation. Now, this study further elaborates on how rituals help to build trust using Yamagishi theory of trust (2001) and discusses about the use of trust in the context of coping with disaster risks.

## 5.8 Trust and Coping with Risk – Complementary Analysis

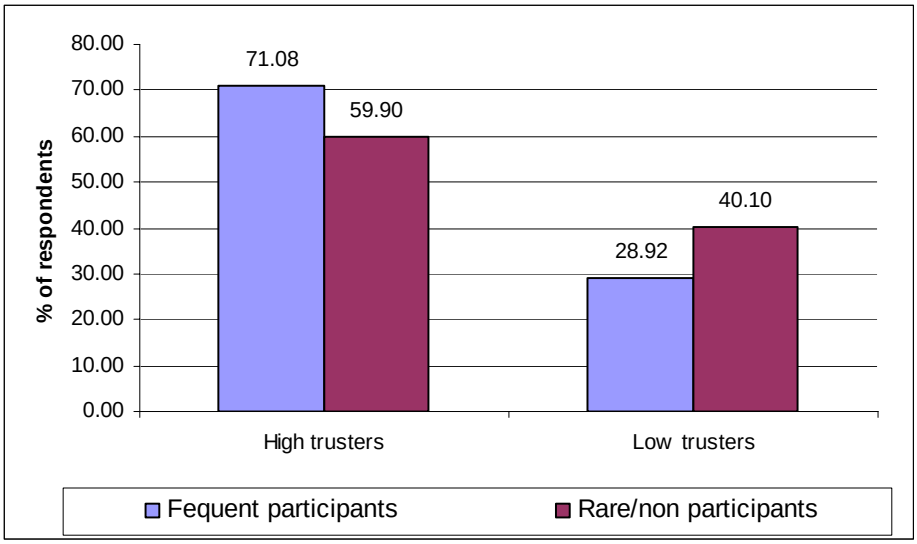
Trust is a hugely debated term by psychologists and social scientists. It has been studied with vigor in risk analysis (Kasperson et al., 1992; Renn and Levine, 1991; Renn et al., 1996; Covello, 1992; Peters et al.,1997; Jungermann et al., 1996; Johnson, 1999; Earle and Cvetkovich, 1995; Cvetkovich and Winter, 2007; Siegrist and Cvetkovich,2000; Siegrist et al., 2001; Seigrist et al.,2003; Seigrist et al.,2005; Poortinga and Pidgeon (2003); Allum, 2007; Earle, 2004; Cvetkovich and Nakayachi, 2007) . What makes people trustful to adopt risk reduction measures? Why people trust some risk managers and not others? What

characters must government possess to gain trust from civilians while implementing risk related policies? Several of these questions have repeatedly troubled practitioners and researchers in the arena of disaster risk management. Luhmann (1979), one of the prominent social psychologist argues that the determinant of trust is high level of expertise or competence and reliability. Others pay attention to fairness, honesty, openness, integrity and objectivity as determinants of trust (Nakayachi, 2010). These studies explain why some people with certain attributes are trusted more than others.

Yamagishi (2001), a Japanese sociologist describes three different types of trust; namely, general trust, particularistic trust and distrust (refer to literature review on Chapter 2). He categorizes people on these trust groups and argues that people with high level of general trust are socially intelligent and more sensitive to judge positive and negative information about trustworthiness of others. This theory provides an opportunity to understand how people use their conscience to know about the trustworthiness of others. It can explain how people with differing level of general trust decide about the trustworthiness of others based on certain information. Also, it provides a leverage to explain how people participating in public activities such as rituals can gain general trust and become socially intelligent.




Lalitpur City, Kathmandu




Kishiwada City, Osaka

Figure 31: Frequency of ritual participation and trust levels

The results of questionnaire survey in case study areas of both Japan and Nepal show that those people frequently participating in rituals tend to have high level of general trust than those who are non-regular participants or non-participants (Fig. 31).

The multiple correlation analysis (Table 5 and 6) between ritual variables and trust in the case study areas of both Japan and Nepal shows that perceived gain from rituals have positive significant correlation with trust (in Kishiwada, r = .28, p<0.01 and in Lalitpur, r = .284, p< 0.01).

Table 5 : Multiple correlation analysis of trust, ritual and social capital variables (Kishiwada City, Osaka)

| | **4** | **3** | **2** | **1** |
|---|---|---|---|---|
| **1. Trust** | **.284**** | .081 | **.302**** | 1 |
| **2. Bonding Social Capital** | **.178**** | **.382**** | 1 | |
| **3. Bridging Social Capital** | .101 | 1 | | |
| **4. Perceived gain from ritual** | 1 | | | |

Pearson's r;

**Correlation significant at 0.01 level (2-tailed).

Table 6: Multiple correlation analysis of trust, ritual and social capital variables (Lalitpur City, Kathmandu Valley)

| | 4 | 3 | 2 | 1 |
|---|---|---|---|---|
| **1. Trust** | **.280**** | **.168**** | **.441**** | 1 |
| **2. Bonding Social Capital** | .116 | **.390**** | 1 | |
| **3. Bridging Social Capital** | .104 | 1 | | |
| **4. Perceived gain from ritual** | 1 | | | |

Pearson's r;

**Correlation significant at 0.01 level (2-tailed).

In Kishiwada (Table 5), trust is positively correlated with bonding social capital ($r = .441$, $p < 0.01$) and bridging social capital ($r = .168$. $p < 0.01$). It means social relationships built with people both inside a community and with those outside a community helps to develop trust. Similarly in Lalitpur City, Kathmandu Valley (Table 6), trust is positively correlated with bonding social capital ($r = .302$, $p < 0.01$). Here, trust is developed through relationships among people inside a community while relationships with people outside a community do not show significant correlation with trust. To summarize, involvement in rituals can be expected to develop social capital (bonding, bridging or both), and is also significant to build trust.

### 5.8.1 General trust and Social Intelligence

The previous explanations show that ritual involvement has significant relationship with building general trust. However, we still can not answer how the general trust inherent in individuals can help to develop social intelligence which enables them to assess trustworthiness of others. Based on Yamagishi's theory (1998, 2001), the relationship between level of general trust in an individual and response to trustworthiness of target person with whom respondents are expected to have communication is examined with the hypothesis;

*The target person's trustworthiness will be different between people who are with high level of general trust and those who are with low level of general trust.*

*High trusters respond more sensitively to either positive or negative information about trustworthiness of target agent compared to low trusters (High trusters are socially intelligent and are more careful attendant to information suggesting the untrustworthiness of the target person.*

#### 5.8.1.1 Survey Design

Respondents were assigned to answer questions about the trustworthiness or untrustworthiness of a target person in hypothetical disaster scenarios. They were asked to imagine the situation described in a questionnaire sheet and to indicate what they would think in such a situation. The questionnaire distributed to the respondents contained two different scenarios. Each scenario described a situation in which the target person might betray other person and escape unnoticed. For instance, the first scenario described about early warning before a tsunami disaster. It hypothesized that evacuation order has already been issued by the government and everyone is running around and escaping to safer areas. The scene is very chaotic and people are rushing towards evacuation routes carrying their belongings. Unfortunately, a nearby neighborhood people, mostly old aged and kids, are in panic, looking completely confused and seeking help. It is generally assumed that everyone knows that they have to support the most vulnerable people during disasters. In such a situation, respondents were asked to rate the trustworthiness of people running away about whether they would extend helping hand to the vulnerable people. The rating indicated the probability of his or her behaving in a trustworthy manner. The question being examined was whether estimations of target person's trustworthiness would be different between high trusters, who tend to trust in general, and low trusters, who tend not to trust others. The respondents were divided into high and low trusters according to their scores on the six-item general trust scale developed by Yamagishi and Yamagishi (1994).

To aid in the assessment of the trustworthiness of people in the target neighborhood, we gave information about that neighborhood to the respondents. In the scenario, one or two pieces of information were provided that suggested the general image about the neighborhood and the inhabitants. For example, in one scenario, the respondents were told that people in the neighborhood greet each other regularly (positive information). Also, additional positive information about the willingness of people to contribute free labor for cleaning and maintaining public spaces during ritual occasions was mentioned. In other scenario, the respondents were told that the people in the neighborhood do not participate in elections (negative information). The other negative information was that people often talked loudly on cell phones in public spaces.

In the second case, respondents were asked to imagine a post-flood scenario in their neighborhood. It is assumed that many houses were devastated by the flood and torrential rain. Luckily, households in a close neighborhood which were built on higher plinths and with flood protection measures remained safe. Flood victims remained in a total shock and were trying their best to shift the household goods to safer places. In such a situation, respondents were asked to indicate the probability whether people in the counterpart neighborhood would be trustworthy and help the flood victims. Information about the counterpart neighborhood was provided to the respondents in order to help them in the assessment of the trustworthiness. For instance, the respondents were told that people in the counterpart neighborhood actively participated in community based disaster management trainings (one positive information). Besides this, they were told that people in the neighborhood served as disaster volunteers in other communities within Japan (other positive information). The other information given was that most parents in the counterpart

neighborhood claimed extra service from children's school and behaved as monster parents (negative information). Apart from this, local police record in the area showed that bicycles and umbrellas were often stolen from the area (other negative information).

The questionnaire survey was comprised of Likert scales. The responses to probability of trustworthiness were recorded as; 1= very low; 2= low; 3= unsure; 4 =high; and 5= very high. The purpose of the survey was to see how such information would affect the respondent's estimation of the trustworthiness of people in the target neighborhood, and see whether high and low trusters responded differently to such information. Each respondent made an estimation of the people in target neighborhood in two different scenarios, one pre-disaster situation and other post-disaster situation. Each scenario was combined with six information conditions; no information about the target neighborhood; one piece of positive information; information suggesting ritual participation of neighborhood people; two pieces of positive information; one piece of negative information; and two pieces of negative information.

#### 5.8.1.2 Case Study Area

The study area is located in Kishiwada City, Osaka, Japan. The main reason for selecting this area is the presence of cultural event such as ritual, besides their geographic proximity mainly from the view point of earthquakes and floods. This area has been greatly affected by natural disasters in general and water related disasters in particular. There has been a heavy loss of lives and property from natural disasters in the past. Therefore the study conducted will be of great relevance towards the urgent need for reducing disaster vulnerability in the region.

#### 5.8.1.3 Sample

Data were collected during May 2010 from a field survey in Kishiwada. Two separate groups of respondents were selected; the first one was workshop participants while the second one was local club members such as elder's group, flower arrangement groups and handicraft group. All the respondents were the residents of Kishwada City, Osaka. In the first case, survey was conducted with face to face interaction with the respondents and some briefings about the survey questionnaires. It facilitated dialogue with the respondents and allowed to clear the purpose of the survey and doubts of the respondents. In the second case, questionnaire sheets were distributed at a community centre and responses were received later on sealed envelopes. Around eighty six valid responses were received out of hundred questionnaire sheets distributed at two different locations. A high response rate of eighty six percent was achieved. The sample of the respondents based on age group, gender, occupations, education, length of stay in the area, household size and frequency of ritual participation are presented below (Fig. 32, 33, 34,35,36,37 and 38):

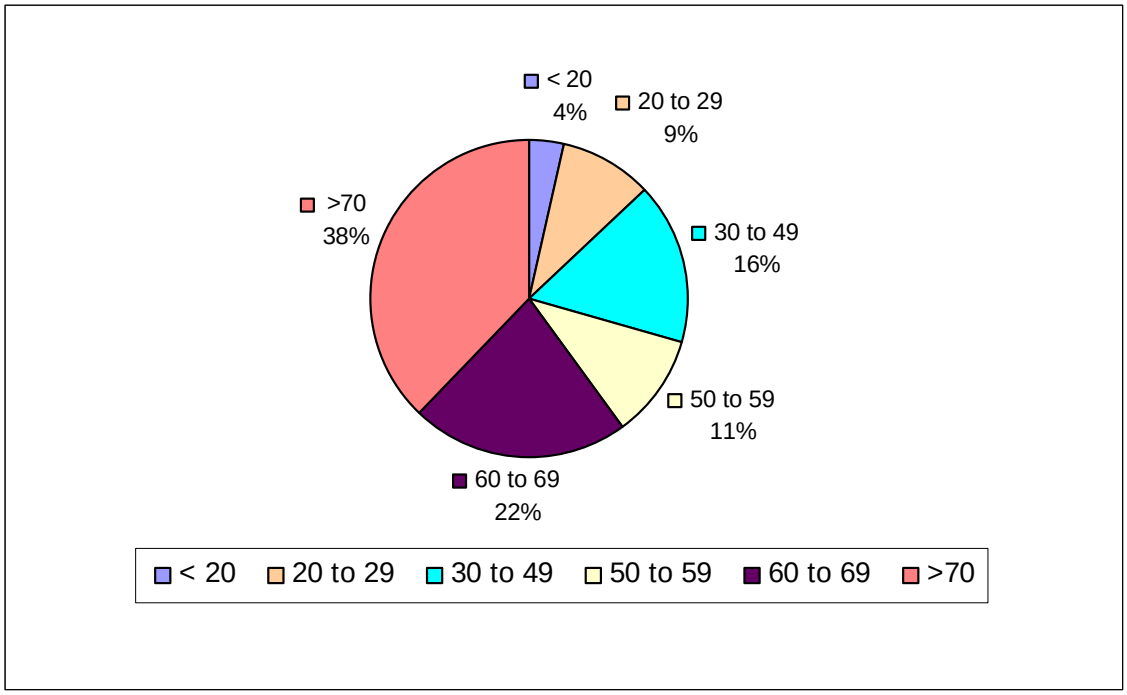



Figure 32: Age group of respondents

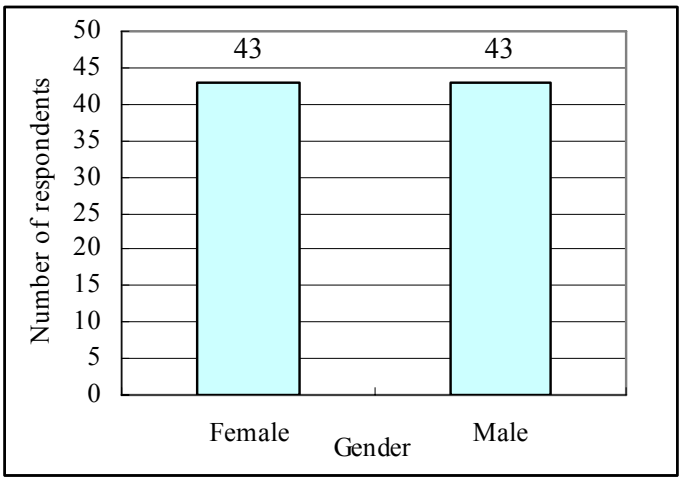



Figure 33 : Gender of respondents

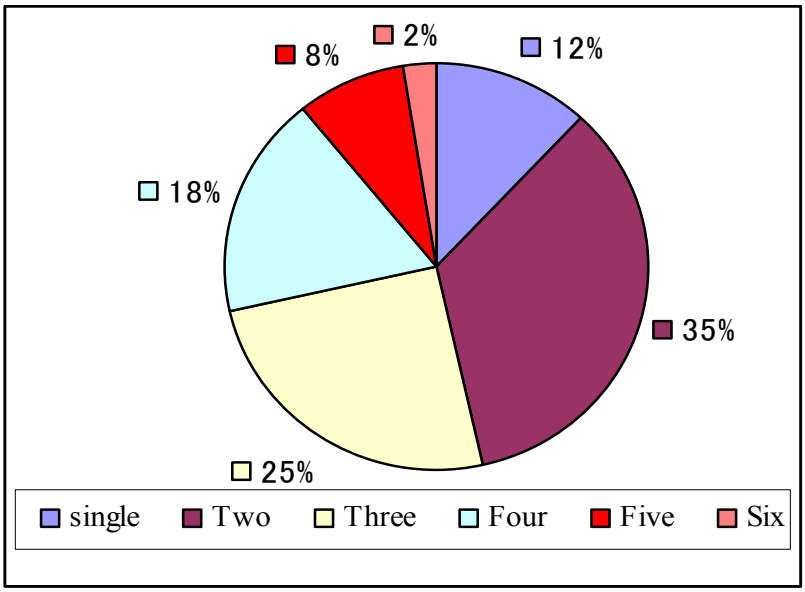



Figure 34 : Household Size of respondents

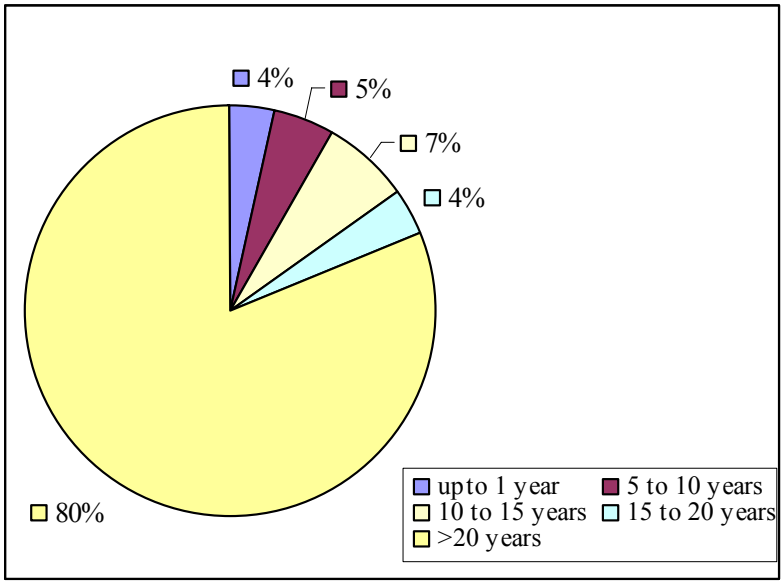



Figure 35: Length of stay in the area (in years)

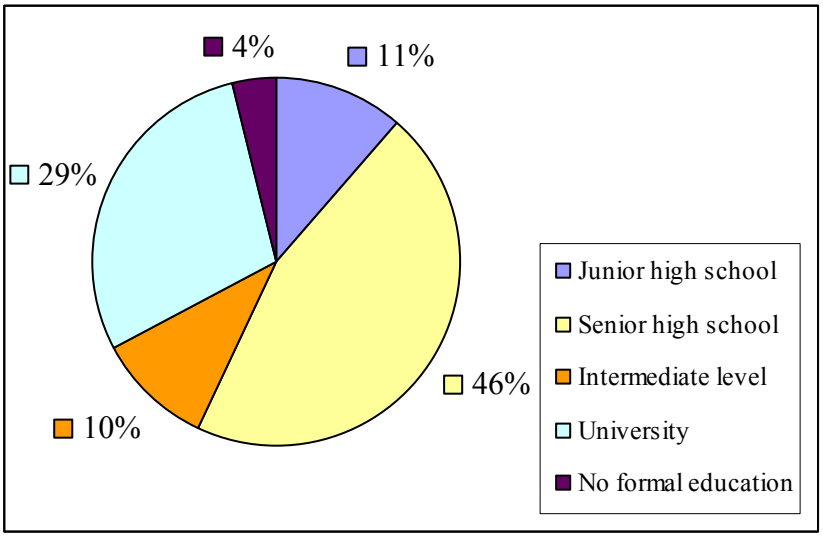



Figure 36: Education level of respondents

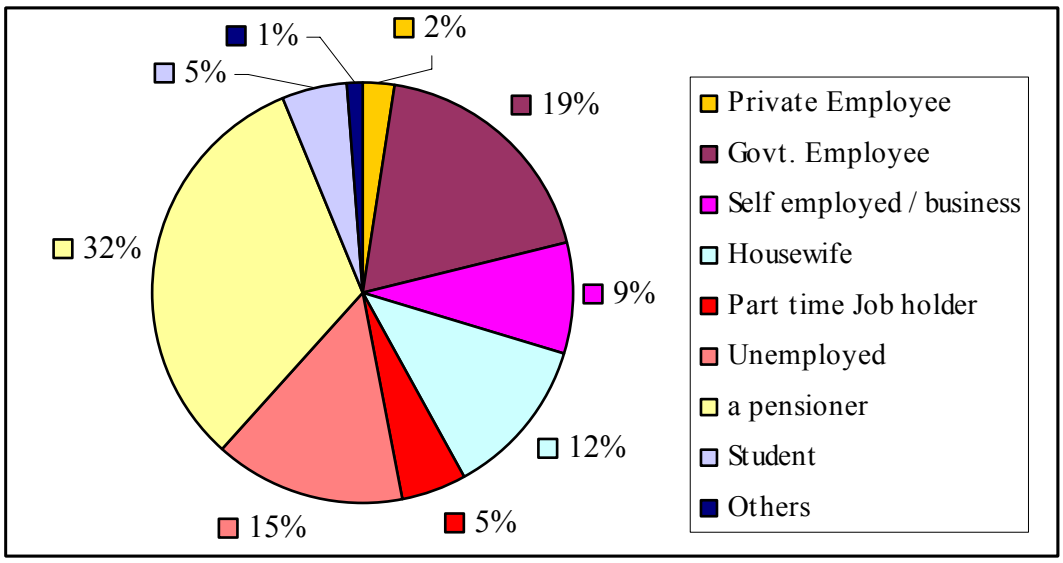



Figure 37: Occupation of respondents

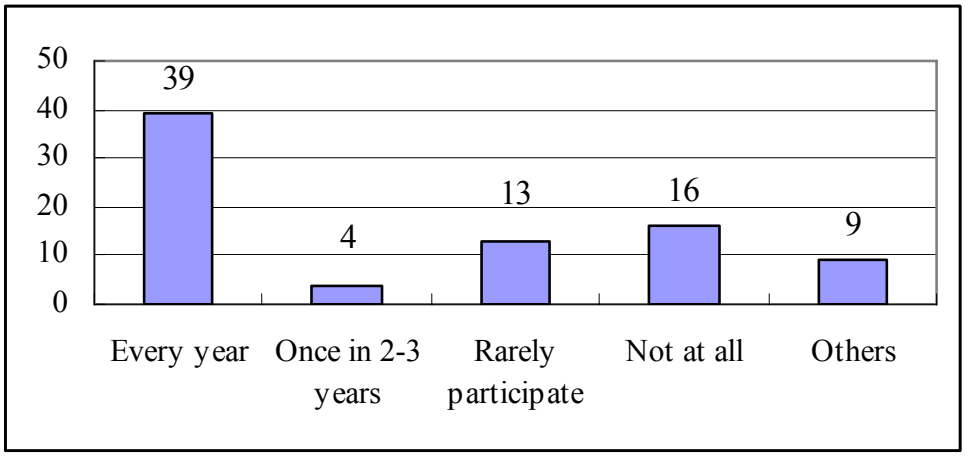



Figure 38: Frequency of ritual participation by the respondents

Of a total sample size of eighty-six people, 50 percent of the participants were women and 50 percent were men. Age distributions were 4 percent below 20 years, 9 percent 20 to 29 years, 16 percent 30 to 49 years, 11 percent 50 to 59 years, 22 percent 60 to 69 years and 38 percent greater than 70 years. The household size of respondents were 12 percent single, 35 percent 2 person, 25 percent 3 person, 18 percent 4 person, 8 percent 5 person and 2 percent 6 person in a family. Length of stay in the area were 4 percent up to 1 year, 5 percent 5 to 10 years, 7 percent 10 to 15 years, 4 percent 15 to 20 years and 80 percent more than 20 years. Education level of respondents were 4 percent with no formal education, 11 percent up to junior high school, 46 percent up to senior high school, 10 percent up to intermediate level and 29 percent were educated up to university level. Occupations included 2 percent private employee, 19 percent government employee, 9 percent with own business / self employed, 12 percent housewives, 5 percent part time job holders, 15 percent were unemployed, 32 percent were pensioner, 5 percent were students and 1 percent others. Out of the total respondents, 48 percent participated every year in rituals; around 5 percent participated once in 2-3 years; 16 percent rarely participated; around 20 percent did not participate at all and 11 percent were not sure about how often they participated.

#### 5.8.1.4 Findings and Analysis

Figure 39 and 40 show the graphs of how estimation of the target person's trustworthiness changed as positive information was provided and negative information was provided in a hypothetical pre-disaster scenario. The left margin of each graph indicates the mean probability estimation by high or low trusters that the target person would act in a trustworthy manner when no information about the person in target neighborhood was provided. When no information was provided about the person in the target neighborhood, high trusters thought that the target person would act in a trustworthy manner to a greater extent than did low trusters (the difference was statistically significant). This also shows that the general trust scale used to classify the respondents reflected fairly well the degree of their general trust.

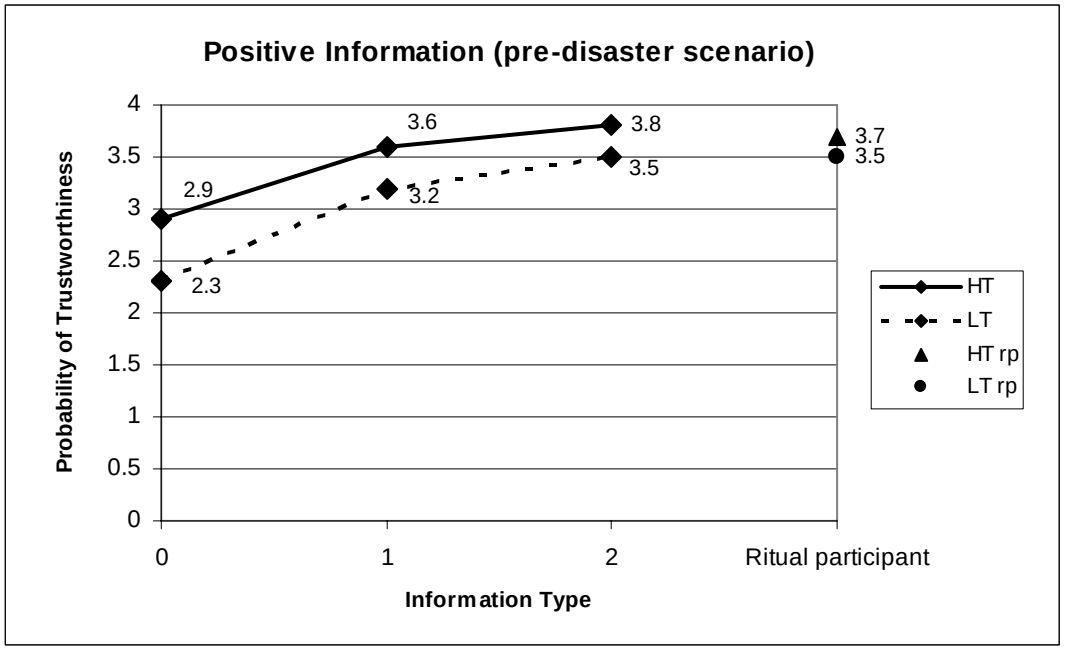



Figure 39 : The effect of positive information (pre-disaster scenario) on high and low trusters estimation of trustworthiness

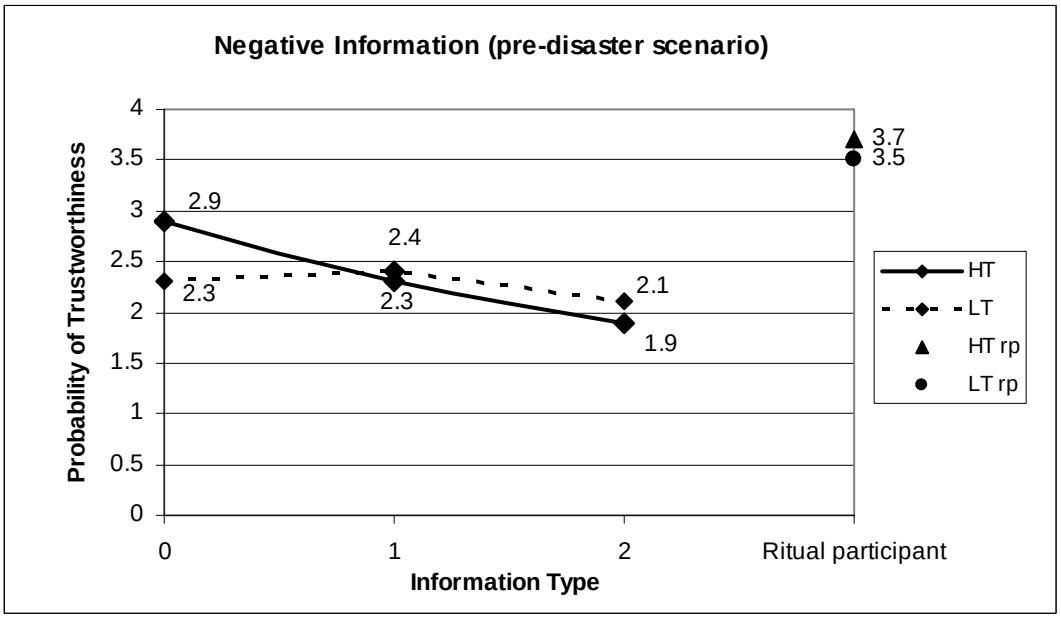



Figure 40: The effect of negative information (pre-disaster scenario) on high and low trusters estimation of trustworthiness

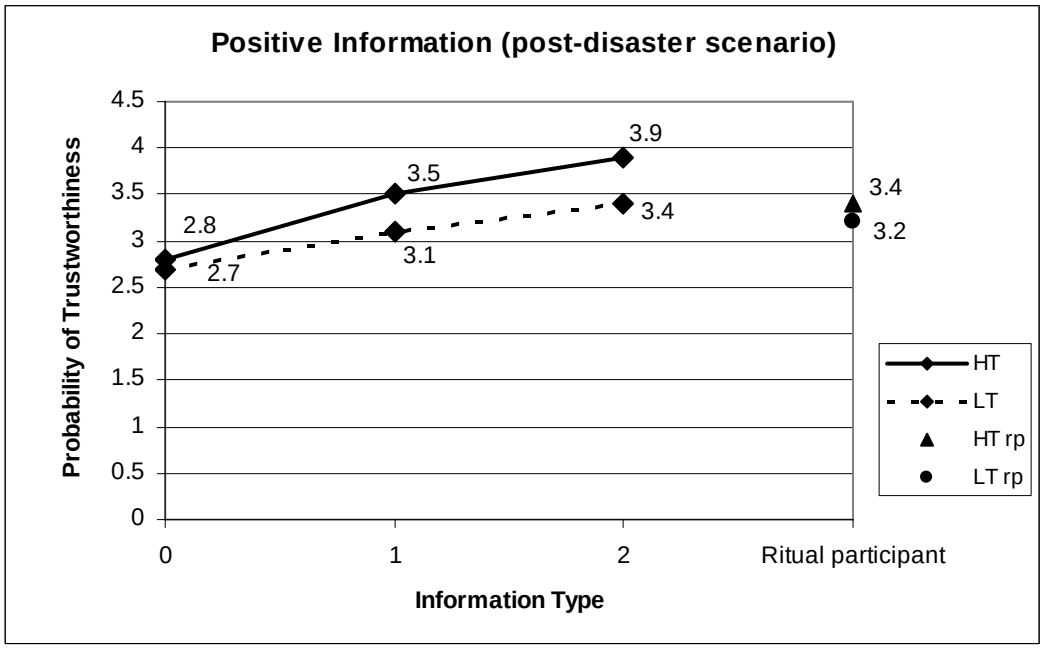



Figure 41: The effect of positive information (post-disaster scenario) on high and low trusters estimation of trustworthiness

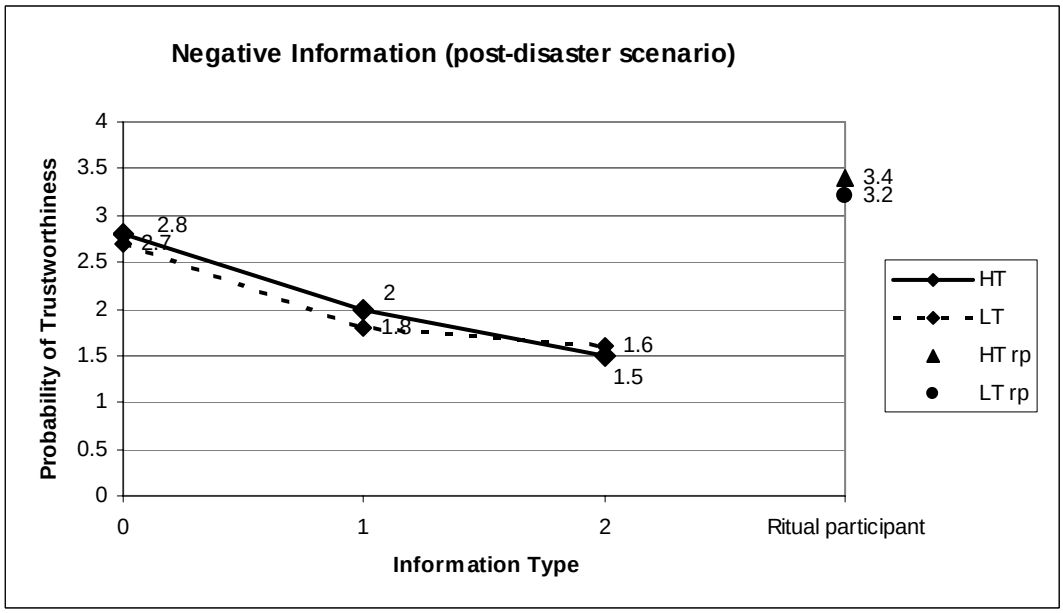



Figure 42: The effect of negative information (post-disaster scenario) on high and low trusters estimation of trustworthiness

Figures 39, 40, 41 and 42 indicate the differences between high trusters and low trusters in their sensitivity to information that might reveal trustworthiness of the target person. Generally, it is believed that low trusters, who do not trust others, are more sensitive to negative information. While high trusters, who tend to trust others are more sensitive to positive information than low trusters (Yamagishi, 2001). Low trusters who are doubtful about others would in general regard that the target person to be untrustworthy. In contrast, high trusters would believe that the target person is trustworthy with only little positive evidence. The field survey data are used to examine the study hypothesis based on these fundamental assumptions.

In the pre-disaster scenario (Figures 39), both high trusters and low trusters are more likely to assess the target person as acting in a trustworthy manner when positive information was provided. High trusters raised their estimation of the target person's trustworthiness rapidly when positive piece of information is provided, while low trusters' estimation does not rise that much. The difference between high and low trusters in their estimation of the target person's trustworthiness almost remained the same both when one piece of positive information is provided and two pieces of positive information are provided. The difference in sensitivity to information between high and low trusters is statistically significant (alpha = 0.05). Figure 40 shows that both high and low trusters reduce their estimation of the target person's trustworthiness when negative information is provided. The change in trustworthiness decreased rapidly with high trusters than low trusters. However, the differential sensitivity to negative information is not statistically significant (alpha=0.05). Compared to low trusters, high trusters responded more sensitively to either positive or negative information. It shows that high trusters are more attentive or cautious to information revealing potential trustworthiness or the lack of it than the low trusters.

Figure 41 and 42 show the responses of high trusters and low trusters in a hypothetical post disaster scenario. The difference of mean probability estimation by high and low trusters that the target person would act in a trustworthy manner when no information about the person in target neighborhood was provided is not large. However, the result is similar to a pre-disaster scenario and it also shows that high trusters are more sensitive to both positive and negative information revealing potential trustworthiness of target person.

## 5.9 Conclusions

At first, this chapter included the results of questionnaire survey carried out in ritual based communities of Japan and Nepal. Rituals are found to develop social capital in terms of strengthening social bond among people within and outside the community. In case of Japan rituals are significantly correlated to the development of trust among people which in turn enhances hazard awareness and self reliance. But, trust is not statistically significant to build hazard awareness in Nepal. Bonding and bridging social capital is found to contribute in the development of hazard awareness. The findings show that that people in Nepal do not seem to be responsible to adopt disaster countermeasures as they are less self reliant and rely more on community authorities.

The study findings are instrumental to understand the significance of community practices such as rituals in terms of developing capacity of a community. In addition to this, rituals also activate community system and change the normal mode of social life into dynamic mode. Local volunteers and public authorities get mobilized to overcome the mishaps during the event. The bottlenecks in the management of safety and security of the community can be tested during the tension mode of vibrant ritual life. Regularly repeated rituals helps to upkeep the momentum of pre-planning, implementation and testing the planned actions for community safety. It also triggers the process of social learning and makes the community more strong to face the future uncertainties. Eventually, community can be empowered and made more resilient to face huge disasters.

In the next part, this chapter presents the findings of a questionnaire survey carried out to check the level of turst of respondents and their social intelligence in Kishiwada City, Japan. It supports the hypothesis that high trusters respond more sensitively to either positive or negative information about trustworthiness of target person compared to low trusters. In other words, high trusters are socially intelligent and are more careful attendant to information suggesting the untrustworthiness of the target person. It implies that people who regularly participate in rituals and gain high level of general trust are socially intelligent compared to those who possess low level of general trust.

In the field survey, disaster scenarios were created to test how respondents evaluate information about target person in such circumstances. High general trust tends to make people more cautious about both positive and negative information. The findings have implications in disaster risk communication where the enhanced level of general trust through rituals helps people to be cautious about disaster information. It shows that low trusters often tend to be insensitive to information. Socio-cultural events such as rituals can be effective medium to change a person from low level of general trust to high level of general trust. Though trivial at the outset, rituals can act as catalyst to motivate people to engage in communication outside their circle of closed family and friends. While involving in chain of social interaction, people can enhance their social intelligence and be more cautious to evaluate the positive or negative information (Yamagishi, 2001). Consequently, people can gain high level of general trust by entering into new social interactions.

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# Chapter 6: Conclusion and Recommendations

This study has primarily focused on analyzing social roles and impacts of rituals in order to enhance the capacity of communities to cope with natural disaster risks; the major focus is placed on studying the ritual process and the outcome. It highlights two different scopes of rituals that can bring synergetic effects in terms of reducing risks from natural hazards.

1. Employs structural ritualization theory (SRT) and its four cardinal components (focus of attention, repetition, interdependence and resources) to relate the ritual process with community capacity development.
2. The role of rituals to develop emotional energy and social integrity among actors as ritual outcome. And, possible implications of ritual outcome such as social capital and trust in enhancing the resilience of communities.

The major contributions of this thesis and some policy implications of rituals in terms of enhancing the capacity of communities to cope with disaster risks are summarized in the next two sections. Finally, our study suggests some potential areas of further research.

## 6.1 Major Contributions

Chapter 1 has introduced the background of this research including the research problem, objectives and the organization of the thesis.

Chapter 2 has provided an overview of literature on rituals, structural ritualization theory, social capital and coping with disaster risks. Structural ritualization theory (SRT) has been used to understand the ritual process on the basis of four conceptual operators; salience, repetition, homologousness and resources. It gives a normative analysis of rituals with its focus on rank that helps to assess the impact of rituals on human behavior. The theory has been instrumental to examine the application of ritualized actions to solve community problems in general and disaster risks in particular. However, the role and performance of rituals to reduce disaster risks is indirect and seems to be trivial at the outset. Literature review shows that rituals contribute in building emotional intensity and group commitment among the actors. SRT gives its focus on emotion-involved behavioral aspect of social interaction in a dynamic ritual event and emphasizes on social integrity. The study relates this phenomenon with the ritual outcome and highlights the theory of social capital. It is conceptualized that the linkage between rituals and social capital is bidirectional and rituals exist due to social capital. SRT gives a methodological leverage to explain the synergetic effect of the ritual process and the ritual outcome in the creation of a disaster resilient society.

Chapter 3 discusses about the case study areas, ritual events and the methodology adopted to study the rituals. Lalitpur city, Kathmandu and Kishiwada city, Japan are both located in densely populated urban areas. The built up density is much higher in Lalitpur. Earthquake is the major natural hazard in Lalitpur while Kishiwada is prone to multi hazards such as flood, earthquake and tsunami. People in both the areas celebrate rituals in the memory of past misfortunes such as an epidemic and a disaster situation. The study uses a mix of research methodologies to understand about local people's perceptions and their experiences about

possible use of rituals in relation to coping with disaster risks. Participatory mapping, sociograms, interviews and questionnaire surveys are some of the specific methods employed in the study. In order to explore about the latent role of rituals in enhancing the disaster resilience of local people structural equation modeling has been performed.

Chapter 4 examines the ritual process in the disaster prone urban communities of Nepal. By using the integrated theoretical framework of Structural ritualization theory and coping with disaster risks, the study highlights the importance of ritualized practices for enhancing the social capacity. The findings from the field study in Lalitpur City, Nepal are related to the four factors of SRT in order to understand how each of them helps to develop the capacity. Focus of attention is interpreted in terms of two aspects that build awareness about disaster risks. The first one is the indirect or masked implication that involves rituals as anniversaries and expected to evoke social memory about past disaster events. As in a town watching practice, ritual procession enhances the familiarity with urban spaces and vulnerable locations within the city. It enhances collective awareness of people. The direct implication of ritual is more obvious, for instance ritual accidents, chariot collapses and casualties generate a sense of risk among the local people.

Rituals invite a change in normal mode of life to a dynamic mode. It activates the role and responsibilities of people in community organizations such as "*Guthi*". Civic authorities get alert to cope with the contingencies during the event. Moreover, it is repeated annually which helps to revive the social memory and activates the sense of risk to human lives and properties. It also allows community based ritual organizations to make their contingency plan better and more efficient to upkeep safety. Interdependence among people from wide areas of the community helps to foster communal solidarity and develop emotional ties. The community consciousness and cooperation that people engender can be extremely helpful in disasters.

Besides this, human and non human resources are extensively utilized during rituals. Rituals help to develop capability of civic agencies to mobilize resources, upkeep and maintain them in order to fulfill the ritual requirements. Most of these resources can be useful during disasters to save lives of people. Finally, based on the four conceptual operators of rituals the study claims that rituals have a profound impact in the behavior of people to take actions for disaster risk reduction and upgrade community safety.

The preliminary analysis based on the four factors of SRT shows that *Danjiri Matsuri* in Japan can contribute to develop capacity of community to cope with disaster risks. The ritual organizations are more organized in Japan and the impact of rituals seem to be more profound. With active community based disaster risk management organizations rituals can provide a synergy to accelerate the disaster risk reduction practices at the community level.

Chapter 5 concentrates in analyzing the prospect of ritual outcome, i.e. social capital in the development of disaster resilience in the urban communities of Nepal and Japan. Rituals are examined as participatory management process involving variables such as bonding social capital, bridging social capital and trust. It is found that rituals contribute to the development of these variables both in the case study areas of Nepal and Japan. Moreover, social capital helps in day to day life of people by making collective decisions to serve the public interest.

The study has identified that rituals rely upon social capital for social implementation of activities related to community benefits.

It is also examined that the synergy between rituals and social capital, particularly activating the social networks gives a momentum to disaster risk reduction efforts such as building hazard awareness and making people more self reliant. To add more, the role of ritual is indirect yet very important as a catalyst to foster disaster risk reduction efforts. People are gaining the capacity to cope with disaster risks unconsciously while following their traditional custom.

In this chapter, structural equation modeling has been used to model the resilience of communities. In Kishiwada City, Japan, perceived gain from rituals, bonding social capital and trust are the predictors of disaster variables such as hazard awareness and self reliance that represent disaster resilience in this study. Trust appears to be a strong predictor of hazard awareness and self reliance. It is predicted by both bonding social capital and perceived gain from rituals. While in Lalitpur city, Kathmandu, bonding social capital and bridging social capital are the predictors of hazard awareness. The obtained results show that policy strategies for changing level of resilience to disasters should set up different priorities, dependent on the socio-cultural and economic contexts. In Japan, people involved in rituals develop trust among each other and their sense of loss from rituals decreases with frequent participation in ritualized activities. It also shows a strong scope of rituals in terms of building trust, hazard awareness and self reliance. In Nepal, it has been identified that elder people perceive gain from rituals but others often tend to perceive loss in terms of time and money. The latter groups of people reveal that they participate in rituals due to compelling religious reasons. People tend to rely more on community and government to cope with disaster risks than on themselves. A clear demarcation has been identified between the coping behaviors of people in the two countries. Further research can explain the differences in terms of social, cultural and economic settings. However, interpretation of rituals in Lalitpur using the SRT model shows that it holds a strong potential to enhance the capacity to cope with disaster risks. Policy strategies should be formulated to correct the misperceptions of people and link rituals to their livelihoods.

Next, this chapter elaborates on how general trust built through rituals develops social intelligence and makes people more sensitive to information about trustworthiness of others. The focus has been given on the operation of trust and it is assumed that people with high level of general trust tend to be more sensitive to information about their counterparts than those with low level of general trust. Prior to this, it has been found that people participating often in rituals have higher level of general trust than those who do not participate. Disaster resilience model also shows trust to be a strong predictor of hazard awareness and self reliance in the community at Kishiwada, Japan. A questionnaire survey is carried out in Kishiwada to examine the probability of trustworthiness of people in hypothetical pre and post disaster scenarios. The results have shown that people with high level of general trust rate the trustworthiness of target person quite high when positive information about them are given. Whereas, they rate the trustworthiness bit low when negative information are given. A significant difference in trustworthiness ratings are found among people with high level of general trust and those with low level of general trust. The result supports the hypothesis that general trust developed through rituals makes people socially intelligent and cautious about

information in disaster scenarios. The higher sensitivity to information indicates that ritual participants enhance their capacity to make decision under uncertainties. According to Yamagishi (2001), high level of general trust that people develop can breed further trust among people in a society. In the study, this phenomenon is understood as building social capital for disaster resilience.

Chapter 6 summarizes the main contributions of the research and refers to the needs for further extensions of this research. This chapter has also discussed about policy implications for disaster risk reductions that can be derived from rituals. It has been identified that in order to successfully implement disaster risk reduction practices in a community it is important to understand local beliefs of people and incorporate livelihood strategies in these practices.

## 6.2 Policy Implications

The concept of ritual is quite important in disaster risk management policies which are quite ignored in the area of implementing knowledge for disaster risk reductions. There is some correspondence between ritual events and disaster risk management practices. Particularly for a low frequency high impact disaster, it is important to identify a socially implementable practice that helps to make a society disaster oriented. In this context, ritual practice set an example to understand socially implementable disaster risk reduction practice at a community level.

The successful implementation of an idea or practice depends on how far it addresses community perceptions, including believes and values; and its viability in terms of resource capability in a society. Rituals can be conceptualized as socially implementable practice based on two clues; the first one is that it is time tested and rooted in local beliefs, and the second is that it generates social capital that supports to activate the practice. It facilitates the transformation of knowledge into action and makes implicit local knowledge more explicit.

The following key factors related to rituals can help the policy makers to understand how a socially viable action can be developed for disaster risk reductions:

### 6.2.1 Linking disaster risk reduction practices with local beliefs and livelihood strategies

Drawing on ethnographic field work, this study examines local beliefs and livelihood strategies related to rituals. In Lalitpur City, Nepal, the concept of *Machhendranath rath jatra* is central to the religious beliefs and practices of people. In local beliefs it is considered to be sacred and life giving because it invites monsoon and rain for the farming community. For this reason, ritual is carried out as a part of the annual agricultural cycle.Therefore, making regular offerings to the holy being, asking permission for cultivation and giving thanks ensures a good harvest and good fortune for the family. The belief in the spirits is widespread in the community, and rituals are observed both to appease and give thanks to the spirit.

Similar opinion is revealed by the local residents in Kishiwada City, Japan. They believe that rituals secure peace and harmony among different occupational groups and offer them with blessings to excel in their respective tasks.

The field survey carried out in the case study areas show that local NGOs and government have shown little concern in integrating livelihood concerns with disaster risk reduction practices. Insufficient recognition is given to the significant role played by the socio-cultural practices such as rituals out of which environmental understandings are sensed and articulated by the people. Local customs such as rituals express the way of life of people how they order their society and relationships. The identity of any community is maintained by the practice of local customs; it is what holds the community together.

Development analysts and NGOs ignore the fundamental feature of people's livelihood and continue to provide inappropriate development solutions undermining the community system possessed by the local residents (Ashley and Carney, 1999). However, there is a need to look more closely at residents' understanding of the world, their actions and how they relate their sense of being. *Machhendranath rath jatra* in Nepal and *Danjiri matsuri* in Japan provide ample opportunity to understand how socially viable actions and intiatives are taken by communities. The policy implications of rituals studies in disaster risk reduction actions can be derived based on two points: first it must be rooted in local beliefs and way of life of people, and second it has to be mobilized by local people in their pursuit of livelihood strategies.

### 6.2.2 Utilizing ritual based social organizations for disaster risk reductions

During community activities such as rituals, social relationships are forged and reproduced, and such relations develop community-wide capacity to arrange and organize work and labour schedules. Rituals give impetus to household and inter-household linkages. In an urbanized community where people are more individualist, they rarely have any social identity (Frece and Poole, 2008). Being a member of ritual based organization allows them to enter a social circle, gain a social status and reap the benefits from mutual exchanges made within the society. The mutual commitment that people develop helps them to support each other during social crisis and disasters.

Findings from the field study in Nepal and Japan show that rituals promote alliances either with members of their immediate or extended family (such as in-laws and uncles), or with men from other households, usually neighbors or old friends. In Lalitpur, Nepal, the divisions of tasks for rituals are made with built-in social systems named *Guthi* (*Chonaikai* in Japan share similar social structure). The success of the *Guthi* system is based on the mutual cooperation of the entire community. When a *Guthi* member is in financial crisis or in need of moral support due to the demise of their beloved family member, *Guthiars* (community members) are always ready to support them. In the community system, elders teach the youngsters, and transfer knowledge and skills. Relationships are built in this process which also serves to ensure solidarity both within domestic groups and the wider community. Most importantly, regardless of other activities a man may pursue, as long as he is a part of *Guthi*, he is respected by the community because he subscribes to an agreed set of practices, beliefs

and values that constitute membership of the society in which he lives. It can be claimed that rituals maintain the social relationships and ensures social support during hardships in life. The coordination and mutual support within ritual based social organizations (*Guthi*) can be expected to be vital for disaster response and rescue efforts.

Perceptions of social status are attached to the ritual and the neighborhood organization related to the ritual. Inhabitants situate themselves socially, both in relation to one another and within the community while fulfilling the ritual tasks. Due respect is given to someone who takes leadership or become local champions. They tend to gain a high social status. For this reason, in local communitites they are the most trusted sources to disseminate disaster information and motivate people to adopt disaster risk reduction measures.

On this background, it can be claimed that community based disaster risk reduction policies have to give due consideration to the built-in social systems of ritual practices and utilize it in enhancing disaster preparedness and community resilience.

### 6.2.3 Further possibilities

The following aspects of rituals can be considered by policy makers in the context of developing capacity to cope with disaster risks:

1. Promote disaster education through rituals by:

    a. Developing ritual procession as a town watching practice.

    b. Building disaster awareness by using symbolic elements of rituals that generates sense of risk to lives and properties.

Ritual events can be used as apparent disaster drills to enhance the response strategy of community based disaster risk reduction organizations.

## 6.3 Further Research

This study highlights some salient features of rituals and provides a scientific methodology to envision rituals as a tool to the development of disaster resilient communities. The further extension of ritual studies in disaster risk reductions should focus on:

1) The present study discussed about ranking based on four factors of structural ritualization theory (SRT) as a measure to coping capacity development. In future, continued attempt should be made to quantify the rank proposed in SRT in order to measure the gain or loss of coping capacity in a community.

2) In case of Kathmandu, SRT model has been employed to understand the ritual process in building the capacity to cope with disaster risks. Further attempts must be made in future to examine the ritual in Kishiwada, Japan in detail using SRT model and highlight the cross-cultural differences in coping capacity development in the two different countries.

3) The present study assumes that the case study communities are homogeneous in terms of income, education, occupation and gender. Further research should be conducted considering the community heterogeneity and identify how such differences affect the coping capacity development through ritual actions in the two different countries.

4) The present study assumes that rituals remain unchanged over time. But studying ritual change can bring some interesting insights into how coping capacity of a community also changes over time. Besides this, modern day adaptations and changes in ritual performances can be studied with reference to the development of coping capacity.

5) It is a well known fact that occurrences of natural disasters such as earthquakes are unpredictable and one cannot be certain whether the ritual based social capital functions as expected in such disaster situations. This study didn't consider how community utilizes its social capital at the time of disaster. Further research can be carried out with a baseline data on pre-disaster and post-disaster scenario, and a more convincing evidence of the use of social capital can be obtained with a comparative analysis in the case of natural disasters.

**Appendix 1 :** Questionnaire Survey - Lalitpur City, Nepal

**प्रश्नावली फारम**

**व्यक्तिगत बिबरण**

| | | |
|---|---|---|
| 1 | उमेर | <२० २१-३० ३०-५० ५०-६० ६०-६९ >७० बर्ष |
| 2 | लिङ्ग | पुरुष महिला |
| 3 | परिवार संख्या | |
| 4 | परिवारमा कोहि अपाङ्ग छ? | छ छैन |
| 5 | यस क्षेत्रमा बस्न थालेको अवधि कति भयो? | < १ बर्ष १-५ बर्ष ५-१० बर्ष १०-१५ बर्ष<br>१५-२० बर्ष >२० |
| 6 | घरको प्रकार | कच्चि अर्ध कच्चि<br>पुरानो शैलिको पक्कि नयाँ शैलिको पक्कि |
| 7 | व्यवसाय | कृषि व्यापार जागिर<br>बिधार्थी अन्य ( ) |
| 8 | तपाईको टोलको नाम के होला ? | |

१। तपाई आफ्नो छिमेकिसँग भुकम्प जस्ता दैबिप्रकोपको बारेमा कतिको कुरा गर्नु हुन्छ?

१= कहिलेपनि गर्दिन
२= धेरै कम गर्छु
३= कहिलेकाही गर्छु
४= प्राय गर्छु
५= अत्यन्तै धेरै गर्छु

२। तपाईले आफ्नो बस्तिमा भुकम्पले गर्दा हुनसक्ने क्षति सम्बन्धि नक्सा (hazard map) हेर्नु भएको छ?

१= यस्तो नक्सा हुन्छ भनेर मलाई थाहै छैन
२= नक्सा हुन्छ भन्ने त थाहा छ तर देखेको छैन
३= नक्सा देखेको त छु तर बुझ्न सक्दिन
४= नक्सा देखेको छु र बुझेको नि छु

३। तपाईले आफ्नो घरमा भुकम्पले गर्दा हुनसक्ने क्षति कम गराउने कुनै उपाय अपनाउनु भएको छ?

१= छ
२= छैन

४। तपाईले आपतबिपतका बेलामा अबश्यक पर्ने बस्तुहरु जस्तै प्राथमिक उपचारका सामान,परिचय पत्र,केहि दिनलाई पुग्ने खानेकुरा र पिउनेपानी राख्नु भएको छ?

१= छ
२= छैन

५। तपाईको बिचारमा जोखिमबाट बच्ने जिम्मेवारी कस्ले लिनु पर्छ?

१= आफैले
२= आफु र सामुदायिक संस्था
३= सामुदायिक संस्था
४= सामुदायिक संस्था र सरकार
५= सरकार
६= अन्य

६। तपाईको बिचारमा जोखिमका बेलामा आबश्यकपर्ने बस्तुहरु जस्तै खानेकुरा र पिठनेपानीको ब्यबस्थापन कस्ले गर्नु पर्छ?

१= आफैले
२= आफु र सामुदायिक संस्था
३= सामुदायिक संस्था
४= सामुदायिक संस्था र सरकार
५= सरकार
६= अन्य

७। तपाईको बिचारमा आपतबिपतको बेलामा असक्त र बुढाबुढीलाई सहयोग गर्ने जिम्मेबरी कस्ले लिनुपर्छ?

१= आफैले
२= आफु र सामुदायिक संस्था
३= सामुदायिक संस्था
४= सामुदायिक संस्था र सरकार
५= सरकार
६= अन्य

८। तपाइको छिमेकमा आफ्नो दुखसुखका कुरा सुनिदिने कोही छन् जस्तो लाग्छ?

१= छ
२= छैन
३= मलाई थाहा भएन

९। तपाई बिरामी भएकाबेला केहिदिन छिमेकीले सहयोग गरिदिन्छन् जस्तो लाग्छ?

१= लाग्छ
२= लाग्दैन
३= मलाई थाहा भएन

१०। तपाईको छिमेकमा भूकम्पको बेला ज्यान जोगाउनलाई भाग्न नसक्ने मान्छे छन्?

१= छ
२=छैन
३= मलाई थाहा भएन

११। अ। तपाईको छिमेकमा कोही सक्त बिरामी भयो वा कसैको स्वर्गबास भयोभने छिमेकका मानिसहरु सहयोग गर्न कति तत्पर हुन्छन्?

१= धेरै कम
२=कम
३=तटस्थ

४= धेरै

५= अत्यन्तै धेरै

आ। छिमेकमा एक अर्कालाई सहयोग नगर्नेलाई कत्तिको निन्दा गर्ने र एक्लो बनाईने गरिन्छ?

१= धेरै कम

२=कम

३=तटस्थ

४= धेरै

५= अत्यन्तै धेरै

१२। तपाई छिमेकीहरुसंग कुन स्तरसम्मको व्यवहार गर्नु हुन्छ?

१= म आफ्नो ब्यक्तिगत कुराहरु तथा समानहरु पनि अदानप्रदान गर्छु

२= म दैनिक रुपमा बोलचालमात्र गर्छु

३= म सामान्य औपचारीकता मात्र पुरयाउछु

४= म छिमेकीको वास्ता गर्दीन

१३। तपाई छिमेकमा कतिजनासंग बोलचाल गर्नुहुन्छ?

१= सबैसंग

२= जम्माजम्मी आधाजती संग

३= थोरैसंगमात्र

४= कसैसंगपनि गर्दिन

१४। तपाई छिमेकिहरुसंग कत्तिको अभिबादन गर्ने र बोल्ने गर्नुहुन्छ?

१= दिनदिनै देखी हप्तामा केहि पटक

२= हप्ताको एकपटक देखी महिनामा धेरै पटक

३= महिनामा एक पटक देखी बर्षमा धेरै पटक

४= बर्षमा एकपटक देखी केहि बर्षमा एकपटक

५= कहिलेपनि गर्दिन

१५। तपाई अफन्तहरुसंग कत्तिको भेटघाट गर्नुहुन्छ?

१= दिनदिनै देखी हप्तामा केहि पटक

२= हप्ताको एकपटक देखी महिनामा धेरै पटक

३= महिनामा एक पटक देखी बर्षमा धेरै पटक

४= बर्षमा एकपटक देखी केहि बर्षमा एकपटक

५= कहिलेपनि गर्दिन

१६। तपाईका प्राय आफन्तहरु कहाँ बस्नुहुन्छ?

१= आफ्नै वडा वरपर

२= वडाबाट बाहिर तर नगरपलिकाभित्रै

३= नगरपलिकाबाहिर तर जिल्ला भित्रै

४= जिल्ला बाहिर

१७। यदि दैबिप्रकोप (जस्तै भुकम्प) को कारण तपाईलाई अन्यत्र अस्थाई बसोबास गर्नुपर्ने भयो, बत्ति पानी र खाने बन्दोबस्त भएन र सरकारको सहयोगपनि पाईनेभएन भने आफुँसँग जे जति छ त्यसले आफुँ र आफ्नो परिवार कति समय बाँच्न सकिन्छ जस्तो लाग्छ?

१= १२ देखि २४ घण्टा

२= १ देखि ३ दिन

३= १ हप्ता

४= १-२ हप्ता

५= १ महिना

## जात्रा सम्बन्धि प्रश्नहरु

१। मच्छिन्द्रनाथको जात्रामा तपाई कतिको सहभागी हुनुहुन्छ?

१= प्रत्येक बर्ष

२= २-३ बर्षमा एकपटक

३= कहिलेकाहीं मात्र

४= कहिलेपनि गर्दिन

२। जात्रामा सहभागि नहुनेहरुको बरेमा तपाईलाईके लाग्छ?

१= खासै थाहा भएन

२= वास्ता गर्दिन

३= समाजकालगि राम्रो कुरा होइन

४= अन्य ( )

३। जात्राको कारण तपाई कतिको अप्ठ्यारो (जस्तै भिडभाड, ध्वनि तथा वाताबरण प्रदुषण, समय र पैसाको नोक्सानी, दैनिक कार्यमा अबरोध) महशुस गर्नुहुन्छ?

१= धेरै कम

२= कम

३= समान्य

४= धेरै

५= अत्यन्तै धेरै

४। **<u>यति तपाई प्राय मच्छिन्द्रनाथको जात्रामा सहभागि हुनुहुन्छ भने</u>** सहभगिता सम्बन्धि तलका कारणहरुप्रति कति सहमत अथवा असहमत हुनुहुन्छ?

| | | अत्यन्तै असहमत | असहमत | तथस्ट | सहमत | अत्यन्तै सहमत |
|---|---|---|---|---|---|---|
| १। | बर्षमा एकपटक आउने महत्वपूर्ण पर्व भयकाले | 1 | 2 | 3 | 4 | 5 |
| २। | समुदायको बारेमा धेरै कुराहरु थाहाहुन्छ | 1 | 2 | 3 | 4 | 5 |
| ३। | जात्राले नयाँ उत्साहा प्रदान गर्छ | 1 | 2 | 3 | 4 | 5 |
| ४। | सधैको थकाई र बैराग्यता बाट छुट्कारा पाईन्छ | 1 | 2 | 3 | 4 | 5 |
| ५। | जात्राको अवसरपारेर परिवारका सबै सदस्यहरु संगै भईन्छ | 1 | 2 | 3 | 4 | 5 |
| ६। | जात्राको अवसरमा नयाँ सथिहरु संग भेट्न पाईन्छ | 1 | 2 | 3 | 4 | 5 |
| ७। | जात्रामा आफ्ना नजिकका सथिहरु संगै हुनेहुनाले | 1 | 2 | 3 | 4 | 5 |

b. कल्पना गर्नुस्, यस क्षेत्र ठुलो भुकम्पले क्षदबिक्षद भयो, संयोगले तपाईको घरलाई केहि हानी भएन, तर नजिकैको छिमेकिको घर भत्केको हुनाले पुननिर्माण गर्न तपाईसंग सहयोग मागे भने तपाई उनलाई सक्दो सहयोग गर्न तयार हुनुहुन्छ?

१= जोकोही भएपनि सहयोग् गर्दिन
२= आफ्नै गुठिको ब्यक्ति भएकाले सहयोग गर्छु
३= आफ्नै गुठिको ब्यक्ति नभएपनि सहयोग गर्छु
४= के गर्छु थाहा भएन

c. कल्पना गर्नुस्, यस क्षेत्र ठुलो भुकम्पले क्षदबिक्षद भयो र तपाईलाई अस्थायि बसोबास क्षेत्रमा बस्नुपर्ने भयो, नजिकैको अस्थायि बसोबासमा खाना र पानीको हाहाकार भयो, यस्तो अवस्थामा यदि तपाईहरु सँग पर्याप्त मात्रामा खानेकुरा र पिउने पानी छ भने बाडेर लिन कतिको तयार हुनुहुन्छ?

१= अत्यन्तै तयार छैन
२= तयार छैन
३= के गर्छु थाहै भएन
४= तयार छु
५= अत्यन्तै तयार छु

d. जात्रापर्वबाट हुने तल उल्लेखित फाईदाहरुबारे तपाईकतिको सहमत अथवा असहमत हुनुहुन्छ?

| | | अत्यन्तै असहमत | असहमत | तथस्ट | सहमत | अत्यन्तै सहमत |
|---|---|---|---|---|---|---|
| १। | स्थानिय संस्कृति बुझ्ने मौका पाईन्छ | 1 | 2 | 3 | 4 | 5 |
| २। | सामुदायिक भावनाको बिकास गर्न मद्दत गर्छ | 1 | 2 | 3 | 4 | 5 |
| ३। | समाजका अन्य ब्यक्तिहरुसंग नजिकिने मौका दिन्छ | 1 | 2 | 3 | 4 | 5 |
| ४। | छरछिमेकमा रहेका बस्तुहरुबारे जानकारी गराउँछ | 1 | 2 | 3 | 4 | 5 |

e. जात्रापर्व को कारणले विभिन्न क्षेत्रका छिमेकीहरु कतिको झगडा गर्दछन?

१= बिल्कुलै गर्दैनन्
२= सायद गर्दैनन्
३= थाहा भएन
४= थोरै गर्दछन्
५= धेरै नै गर्दछन्

f. तपाई तलका भनाईहरु प्रति कतिको सहमत अथवा असहमत हुनुहुन्छ?

| | | अत्यन्तै असहमत | असहमत | तथस्ट | सहमत | अत्यन्तै सहमत |
|---|---|---|---|---|---|---|
| १। | मच्छिन्द्रनाथ जात्रामा पदयात्रा गर्दा भुकम्पकाबेलामा भागेर ज्यान जोगाउने ठाउँहरु थाहा हुन्छ | 1 | 2 | 3 | 4 | 5 |
| २। | मच्छिन्द्रनाथको जात्रामा सहभागी हुन नसक्ने बुढाबुढी र असक्तहरु कहाँ बस्दा रहेछन् थाहा हुन्छ | 1 | 2 | 3 | 4 | 5 |
| ३। | जात्राले बिगतको दैबिप्रकोप र महमारीको याद गराउँछ | 1 | 2 | 3 | 4 | 5 |

5. **तपाई मच्छिन्द्रनाथको जात्रामा सहभागी हुनुहुन्न** भने किन हुनुहुन्न होला?

१= समय नभएकाले

२= सहभगी हुन धेरै पैसा लाग्ने हुनाले

३= मलाई जात्रा मनपर्दैन

४= जात्रापर्वले दुर्घटना र प्रतिस्पर्धा निम्त्याउने हुनाले

## समुदाय सम्बन्धि प्रस्नहरु

१। तपाई तल उल्लेखित सामुदायिक क्रियाकलापहरुमा कतिको सहभागी हुनुहुन्छ?

| SN | समुदायिक क्रियाकलाप | सहभागीताको प्रकार | | | | |
|---|---|---|---|---|---|---|
| | | दैनिक देखि हफ्ताको केहि पटक | हफ्ताको एक पटक देखि महिनामा धेरै पटक | महिनाको एक पटक देखि बर्षमा धेरै पटक | बर्षमा एक पटक देखि २-४ बर्षमा एक पटक | सहभागी हुन्न |
| a | स्थानीय क्रियाकलाप (जस्तै युथ क्लब, आमा समूह, बच्चाबच्चीको क्लब) | 1 | 2 | 3 | 4 | 5 |
| b | स्थानीय क्रियाकलाप (जस्तै अगलागी बचाठ अभियान, समुदाय सुरक्षा अभियान) | 1 | 2 | 3 | 4 | 5 |
| c | स्थानीय क्रियाकलाप (जस्तै स्थानीय पर्यटन प्रबर्दन, क्षेत्रको इतिहास र बस्तुकला प्रचार अभियान) | 1 | 2 | 3 | 4 | 5 |
| d. | औधोगिक तथा व्यवसायिक समूह | 1 | 2 | 3 | 4 | 5 |
| e. | खेलकुद तथा मनोरन्जन समूह | 1 | 2 | 3 | 4 | 5 |
| f. | गैरसरकारी संस्था संवन्धित समूह (जस्तै rotary club, red cross, volunteers) | 1 | 2 | 3 | 4 | 5 |
| g. | अन्य समूह जस्तै धर्मिक र स्वास्थ्य सम्बन्धि | 1 | 2 | 3 | 4 | 5 |

२। तपाईको समुदायलाई परिचालन प्राय कस्ले गर्दछ?

१= गैरसरकारी संस्थाको नेताले

२= समुदायको पाको ब्यक्तिले

३= महिलाहरुले

४= युबकहरुले

५= नगरपलिकाको प्रतिनिधिले

६= थाहा भएन

३। तपाईको गुठीको नेताको चयन कसरी हुन्छ?

१= नेत्रित्व क्षमता भएका ब्यक्तिबाट
२= सबैको हेरबिचार गर्न जान्ने ब्यक्ति मध्यबाट
३= उमेरको अधारमा
४= मतदान बाट
५= हचुवाको अधारमा
६= थाहा भएन

४। तपाई प्रमुख रुपमा कुन गुठिमा संलग्न हुनुहुन्छ होला? .....

५। तपाई तलका भनाईहरु प्रति कति सहमत अथवा असहमत हुनु हुन्छ?

| | | अत्यन्तै असहमत | असहमत | तथस्ट | सहमत | अत्यन्तै सहमत |
|---|---|---|---|---|---|---|
| १। | म छिमेकमा प्राय मानिसहरुलाई बिश्वाश गर्न सक्छु | 1 | 2 | 3 | 4 | 5 |
| २। | म छिमेकका मनिसहरु संग संगतगर्दा बिचार गर्छु | 1 | 2 | 3 | 4 | 5 |
| ३। | म छिमेकबाट जुनसुकैबेला पनि सहयोग प्राप्त गर्न सक्छु | 1 | 2 | 3 | 4 | 5 |

६। यदि तपाईले गरेको योगदानले तपाईको ब्यक्तिगत भन्दापनि समुदायको हितहुन्छ भने के तपाई कम्तिमा पनि अधादिन जति श्रमदान गर्न तयार हुनुहुन्छ?

१= तयार छु
२= भन्न सक्दिन
३= तयार छैन

## सहयोगको लागि धन्यबाद !!!

**Appendix 2 :** Questionnaire Survey (1) - Kishiwada City, Osaka, Japan

## 「地域防災に関するアンケート」へのご協力のお願い

時下ますますご清栄のこととお喜び申し上げます。

京都大学防災研究所の巨大災害研究センター・災害リスクマネジメント研究領域では地域住民が主体となる地域防災のあり方について研究しています。そしてこのたびは、岸和田市の特徴である祭りとの関係などに着目しながら、岸和田市にお住まいの皆様の地域や防災への関心や考え方に関するアンケート調査を行うことにいたしました。

本アンケート調査の対象者は、岸和田市にお住まいの皆様です。アンケート用紙、返信用封筒にはお名前やご住所をご記入いただく必要はありません。また、本アンケートから得られた情報は、地域の防災対策に反映されるだけではなく、研究報告や学術出版物に掲載されることがありますが、結果は統計的な資料にまとめて発表いたしますので、皆様ひとりひとりのご意見が公表されることはありません。なお、回答時間は約１０分少々を目安にしていただき、答えにくい点に関しましては答えていただかなくて結構ですので、ご協力をお願いします。

お忙しいところ大変恐れ入りますが、調査の趣旨をご理解いただき、ご協力いただきますようお願い申し上げます。ご不明な点がございましたら、下記までお問い合わせください。

2009 年 12 月 2 日

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**以下の質問を読み、該当する項目に○をつけて下さい。**

１．あなたはよく近所の人々と防災・災害に関連する話題について話し合いますか？
　１＝全く話さない
　２＝あまり話さない
　３＝どちらとも言えない
　４＝時々話す

５＝よく話す

２．岸和田市が公表しているハザードマップを見たことがありますか？
１＝存在を全く知らなかった
２＝存在は知っていたが見たことはない
３＝見たことはあるが理解できなかった
４＝見たことがあり理解できた

３．避難勧告（避難したほうがいい）が出た場合あなたは避難しますか？
１＝避難する
２＝避難しない

４．避難指示（避難しなさい）が出た場合あなたは避難しますか？
１＝避難する
２＝避難しない

５．自宅待機か避難所へ避難するかの判断は誰が主体的に行うべきだと思いますか？
１＝個人
２＝個人や自主防災組織
３＝自主防災組織
４＝自主防災組織や行政
５＝行政
６＝その他

６．飲料水・食料品などの物資の蓄えや手配は誰が主体的に行うべきだと思いますか？
１＝個人
２＝個人や自主防災組織
３＝自主防災組織
４＝自主防災組織や行政
５＝行政
６＝その他

７．独居老人等の一人で避難が困難な方への連絡・避難対応は誰が主体的に行うべきだと思いますか？
１＝個人
２＝個人や自主防災組織
３＝自主防災組織
４＝自主防災組織や行政
５＝行政
６＝その他

８．近所の方で、あなたの心配事や愚痴を聞いてくれる人がいますか？
１＝いる
２＝いない
３＝分からない

９．近所の方で、あなたが病気で数日間寝込んだ時に、看病や世話をしてくれる人がいますか？

１＝いる
２＝いない
３＝分からない

１０．あなたの近所に一人では避難することができない方はいますか？

１＝いる
２＝いない
３＝分からない

１１．あなたは以下の項目の内容にどのくらい同意できますか？５段階で評価してあてはまるものに１つ○をつけて下さい。

（１＝全く同意できない、２＝あまり同意できない、３＝どちらとも言えない、４＝少し同意できる、５＝かなり同意できる）

| | | 全く同意できない | あまり同意できない | どちらともいえない | 少し同意できる | かなり同意できる |
|---|---|---|---|---|---|---|
| 1. | あなたの近所で誰かが不幸（病気や親類の死など）に見舞われたとします。その時近所の人たちは協力してその人を支援するだろう | 1 | 2 | 3 | 4 | 5 |
| 2. | 地域活動（祭りなど）にあまり参加していない人は批判されたり孤立したりしていく恐れがある | 1 | 2 | 3 | 4 | 5 |

１２．近所の方とのおつきあいはどの程度ですか？

１＝互いに相談したり、日用品の貸し借りをするなど生活面で協力し合っている人もいる
２＝日常的に立ち話をする程度の付き合いはしている
３＝あいさつ程度の最小限の付き合いしかしていない
４＝付き合いはまったくしていない

１３．おつきあいしている近所の方はどれくらいいますか？

１＝町内のほぼすべての人と面識・交流がある
２＝町内の半分程度の人と面識・交流がある
３＝町内のごく少数の人とだけ面識・交流がある
４＝町内の人とはほとんど面識・交流はない

１４．近所の方とあいさつや、会話をする頻度はどの程度ですか？

１＝毎日～週数回程度

２＝週１回～月に数回程度
３＝月に１回～年に数回程度
４＝年１回～数年に１回程度
５＝まったくない

１５．あなたが親戚・親類と会う頻度はどの程度ですか？
１＝毎日～週数回程度
２＝週１回～月に数回程度
３＝月に１回～年に数回程度
４＝年１回～数年に１回程度
５＝まったくない

１６．親戚・親類の大部分はどの範囲にお住まいですか？
１＝町内
２＝町外（市内）
３＝市外（府内）
４＝府外

１７．地震等の自然災害が発生し、あなたやあなたの家族は中学校や小学校などの一時避難所で過ごすことになったとします。（水道、電気、ガスは止められ、物資や食料の量は各家庭が非常用に備えていた程度であり）行政や救助機関からの支援がない場合、あなたやあなたの家族はどれほどの期間生活できると思いますか？
１＝１２～２４時間
２＝１日～３日
３＝１週間程度
４＝１～２週間
５＝一ヶ月程度

## 次にあなたとだんじり祭りの関係についておたずねします。

１．だんじり祭りにはどのくらいの頻度で参加されていますか？
１＝毎年
２＝2～3 年に一度
３＝極まれに
４＝まったく参加していない

２．祭りに参加していない人についてどう思いますか？
１＝特になにも思わない
２＝仕方がないと思う
３＝付き合いが悪いと思う
４＝その他（　　）
３．祭りがもたらす損失や負の要素（時間の浪費、費用、混乱、騒音、日常生活や仕事への支障）の程度を５段階で評価して、あてはまるものに○をして下さい。

１＝大変小さい
２＝小さい
３＝普通
４＝大きい
５＝大変大きい

**先ほどの質問１に１または２と答えた方（だんじり祭りに比較的よく参加されている方）は質問４へ、３または４と答えた方（だんじり祭りにあまりよく参加されていないあるいは全く参加されていない方）は質問５へお進み下さい。**

４．（先ほどの質問１に１または２と答えた方のみお答えください）

（a）だんじり祭りに参加されている動機についてお聞きします。以下の項目がどれくらい参加の動機になっているかを５段階で評価して、あてはまるものに１つ○をつけて下さい。

（１＝全く同意できない、２＝あまり同意できない、３＝どちらとも言えない、４＝少し同意できる、５＝かなり同意できる）

| | 全くあてはまらない | あまりあてはまらない | どちらともいえない | 少しあてはまる | かなりあてはまる |
|---|---|---|---|---|---|
| 1. 日常生活では体験できないこと（だんじりの曳行やかけ声など）が体験できるから | 1 | 2 | 3 | 4 | 5 |
| 2. 地域のことをもっと知れるから | 1 | 2 | 3 | 4 | 5 |
| 3. 退屈しのぎができるから | 1 | 2 | 3 | 4 | 5 |
| 4. 不安やストレスの解消ができるから | 1 | 2 | 3 | 4 | 5 |
| 5. 家族で楽しめるから | 1 | 2 | 3 | 4 | 5 |
| 6. 祭りに参加することで新たな出会いがあるかもしれないから | 1 | 2 | 3 | 4 | 5 |
| 7. 祭りに行くと仕事仲間や友人に会えるから | 1 | 2 | 3 | 4 | 5 |

（b）あなたの住んでいる地域で巨大地震が起きたとします。幸いにもあなたの家は軽度な損傷ですんだとします。そんな時、町内の人が倒壊した自分の家の復興作業を手伝って欲しいと頼んできたとします。それに対するあなたのとりうる行動にあてはまりそうなものを１つ選んで○をつけて下さい。

１＝相手が誰でも断る
２＝祭り等を通じて親しくなった相手であれば手伝いに行く
３＝誰でも手伝いに行く
４＝分からない

（c）あなたの地域（町）で災害が起きて、あなたは町の一時避難所で生活してい

るとします。非常食もあともう少しで底をつきます。救助はいつ来るか分かりません。そこへ他地域（町）の人たちが食料を分けてほしいと言ってきた場合、あなたは彼らに食料を分けることに関してどう思いますか？

１＝全く同意できない
２＝あまり同意できない
３＝どちらとも言えない
４＝少し同意できる
５＝かなり同意できる

(d) 祭りに参加することによって得られることはなんだと思いますか？以下の項目を５段階で評価してあてはまるものに１つ○をつけて下さい。

（１＝全く同意できない、２＝あまり同意できない、３＝どちらとも言えない、４＝少し同意できる、５＝かなり同意できる）

| | 全く同意できない | あまり同意できない | どちらともいえない | 少し同意できる | かなり同意できる |
|---|---|---|---|---|---|
| 1. 地域文化のよりよい理解 | 1 | 2 | 3 | 4 | 5 |
| 2. 地域の一員であるという自覚 | 1 | 2 | 3 | 4 | 5 |
| 3. 地域の土地勘 | 1 | 2 | 3 | 4 | 5 |
| 4. 地域の人々との親密さの向上 | 1 | 2 | 3 | 4 | 5 |

(e) だんじり祭りの前後において、あなたの住んでいる町が他の岸和田市の町とライバル関係になることがあると思いますか？あてはまるものに１つ○をつけて下さい。

１＝全くない
２＝あまりない
３＝どちらとも言えない
４＝少しある
５＝大いにある

(f) あなたは以下の項目の内容にどのくらい同意できますか？５段階で評価してあてはまるものに１つ○をつけて下さい。

（１＝全く同意できない、２＝あまり同意できない、３＝どちらとも言えない、４＝少し同意できる、５＝かなり同意できる）

| | | 全く同意できない | あまり同意できない | どちらともいえない | 少し同意できる | かなり同意できる |
|---|---|---|---|---|---|---|
| 1. | だんじり祭りの曳行コースを走ることによって地域の避難所や避難経路をよりよく認識できるようになる。 | 1 | 2 | 3 | 4 | 5 |
| 2. | 祭りに参加することでその地域内の祭りに参加できない方（高齢者や身障者、小さな子供など）の現状をよりよく認識することができる。 | 1 | 2 | 3 | 4 | 5 |
| 3. | この祭りによってこの地域で過去に起こった自然災害を思い出させられることがある。 | 1 | 2 | 3 | 4 | 5 |

５．（**先ほどの質問１に３または４と答えた方のみお答えください**）

（a）だんじり祭りに参加されていない理由を以下からお選び下さい。（複数回答可）

１＝膨大な時間を消費するから
２＝お金がかかるから
３＝だんじり祭りそのものに対する愛着があまりないから
４＝怪我や喧嘩等の揉め事に巻き込まれたくないから
５＝その他

（b）あなたの住んでいる地域で巨大地震が起きたとします。幸いにもあなたの家は軽度な損傷ですんだとします。そんな時、町内の人が倒壊した自分の家の復興作業を手伝って欲しいと頼んできたとします。それに対するあなたのとりうる行動にあてはまりそうなものを１つ選んで○をつけて下さい。

１＝相手が誰でも断る
２＝顔見知りであれば手伝いに行く
３＝誰でも手伝いに行く
４＝分からない

（c）あなたの地域（町）で災害が起きて、あなたは町の一時避難所で生活しているとします。非常食もあともう少しで底をつきます。救助はいつ来るか分かりません。そこへ他地域（町）の人たちが食料を分けてほしいと言ってきた場合、あなたは彼らに食料を分けることに関してどう思いますか？

１＝全く同意できない
２＝あまり同意できない
３＝どちらとも言えない
４＝少し同意できる
５＝同意できる

（d）あなたは以下の項目の内容にどのくらい同意できますか？５段階で評価してあてはまるものに１つ○をつけて下さい。

（１＝全く同意できない、２＝あまり同意できない、３＝どちらとも言えない、４＝少し同意できる、５＝かなり同意できる）

| | 全く同意できない | あまり同意できない | どちらともいえない | 少し同意できる | かなり同意できる |
|---|---|---|---|---|---|
| 1. だんじり祭りの曳行コースを走ることによって地域の避難所や避難経路をよりよく認識できるようになる。 | 1 | 2 | 3 | 4 | 5 |
| 2. 祭りに参加することでその地域内の祭りに参加できない方（高齢者や身障者、小さな子供など）の現状をよりよく認識することができる。 | 1 | 2 | 3 | 4 | 5 |
| 3. この祭りによってこの地域で過去に起こった自然災害を思い出させられることがある。 | 1 | 2 | 3 | 4 | 5 |

次に、あなたがお住まいの地域（コミュニティ）に関しておたずねします。

１．あなたは、次のような活動や集まりにどのくらい参加していますか？あてはまる頻度に○をして下さい。

| 活動 | 活動の頻度 |
|---|---|
| A　地縁的な活動①（自治会、町内会、婦人会、老人会、青年会、子ども会等） | （１）毎日～週数回程度　（２）週１回～月数回程度<br>（３）月１回～年数回程度　（４）年１回～数年に１回程度<br>（５）参加していない |
| B　地縁的な活動②（消防団活動や防犯のためのパトロール等） | （１）毎日～週数回程度　（２）週１回～月数回程度<br>（３）月１回～年数回程度　（４）年１回～数年に１回程度<br>（５）参加していない |
| C　地縁的な活動③（地域の歴史、文化の学習や伝統を守る活動） | （１）毎日～週数回程度　（２）週１回～月数回程度<br>（３）月１回～年数回程度　（４）年１回～数年に１回程度<br>（５）参加していない |
| D　地域活性化のための活動（直売所や加工所など、地域活性化のための活動） | （１）毎日～週数回程度　（２）週１回～月数回程度<br>（３）月１回～年数回程度　（４）年１回～数年に１回程度<br>（５）参加していない |
| E　スポーツ・趣味・娯楽活動（各種スポーツ、芸術文化活動、生涯学習等） | （１）毎日～週数回程度　（２）週１回～月数回程度<br>（３）月１回～年数回程度　（４）年１回～数年に１回程度<br>（５）参加していない |
| F　ボランティア・ | （１）毎日～週数回程度　（２）週１回～月数回程度 |

| | |
|---|---|
| NPO・市民活動（まちづくり、高齢者・障害者福祉や子育て支援） | （３）月１回～年数回程度　（４）年１回～数年に１回程度<br>（５）参加していない |
| G　その他の活動（商工会、宗教、政治など） | （１）毎日～週数回程度　（２）週１回～月数回程度<br>（３）月１回～年数回程度　（４）年１回～数年に１回程度<br>（５）参加していない |

２．町の取りまとめは、主にどのような方々が中心となっていますか？

１＝自治会長など地域の代表者
２＝年配の方
３＝女性
４＝若者
５＝その他（市職員等）
６＝分からない

３．あなたの町では、自治会長はどのようにして決められていますか？（複数回答可）

１＝リーダーシップのある人
２＝世話が行き届く人
３＝適齢の人
４＝住民の推薦
５＝もちまわり
６＝分からない

最後にあなた自身について少しおたずねします。差し支えのない範囲で下さい。

１．あなたの年齢や性別、家族構成についてお聞きします

（ア）年齢

| | | |
|---|---|---|
| **1.** 20 歳未満 | **2.** 20 歳以上~30 歳未満 | **3.** 30 歳以上~50 歳未満 |
| **4.** 50 歳以上~60 歳未満 | **5.** 60 歳以上~69 歳未満 | **6.** 70 歳以上 |

（イ）性別

| | |
|---|---|
| **1.** 男性 | **2.** 女性 |

（ウ）世帯人数　　あなたをふくめて（　　）人

（エ）あなたの世帯には災害時要支援者がいますか。

| | |
|---|---|
| **1.** いる、_____人 | **2.** いない |

＊災害時要支援者とは、65 歳以上の成人と 6 歳以下の子供、災害が発生した場合、安全な場所への避難行動や避難場所での生活において大きな困難が生じ、まわりの人の手助けを必要とする人たちのことをいいます。例えば、移動が困難な人、

車いす、補聴器などの補装具を必要とする人、情報を入手したり、発信したりすることが困難な人、急激な状況の変化に対応が困難な人、薬や医療装置が常に必要な人、精神的に不安定になりやすい人のことです。

（オ）あなたは岸和田市に住んでどれくらいになりますか？

| | | |
|---|---|---|
| **1.** 1 年未満 | **2.** 1 年~5 年 | **3.** 5 年~10 年 |
| **4.** 10 年~15 年 | **5.** 15 年~20 年 | **6.** 20 年以上 |

（カ）あなたは今住んでいる住居のタイプは以下のどれになりますか。

| | | |
|---|---|---|
| **1.** 一軒家 | **2.** アパート、マンション | **3.** その他 |

２．あなたの職業について差し支えのない範囲でお答え下さい。

| | | |
|---|---|---|
| **1.** 会社員・役員 | **2.** 公務員・教職員 | **3.** 自営業 |
| **4.** 農林漁業 | **5.** 主婦 | **6.** パート・アルバイト |
| **7.** 無職 | **8.** 年金受給者 | **9.** 学生 |
| **10.** その他( | | ) |

３．あなたがお住まいの町はどこですか？
(　　)

４．あなたは以下の項目にどのくらい同意できますか？

| | 全く同意できない | あまり同意できない | どちらともいえない | 少し同意できる | かなり同意できる |
|---|---|---|---|---|---|
| 1. おおむね近所の人たちは信頼できる | 1 | 2 | 3 | 4 | 5 |
| 2. いつも近所の人たちに気を遣って接している | 1 | 2 | 3 | 4 | 5 |
| 3. いつでも近所の誰かに助けを求めることができる | 1 | 2 | 3 | 4 | 5 |

５．あなたにとって利益はないが、地域全体にとっては利益があることのために、半日だけ時間を提供することが自治会や町内会で決められようとしていた場合、あなたはどうしますか？

１＝賛成する
２＝賛成も反対もしない
３＝反対する

質問は以上です。ご協力ありがとうございました！

**Appendix 3 :** Questionnaire Survey (2) - Kishiwada City, Osaka, Japan

## 「信頼と防災に関するアンケート」へのご協力のお願い

拝啓　時下ますますご清栄のこととお喜び申し上げます。

京都大学防災研究所の巨大災害研究センター・災害リスクマネジメント研究領域では地域住民が主体となる地域防災のあり方について研究しています。そしてこのたびは岸和田市にお住まいの皆様を対象に、人々が他人に抱く信頼の度合いに着目したアンケート調査を行うことにいたしました。本アンケート結果をもとに、人々の信頼関係に基づいた地域防災の方法について研究する予定です。

アンケートは匿名で行いますので、アンケート用紙にお名前やご住所をご記入いただく必要はございません。また、本アンケートから得られた情報は、地域の防災対策に反映されるだけでなく、研究報告や学術出版物に掲載されることがありますが、結果は統計的な資料にまとめて発表いたしますので、皆様ひとりひとりのご意見が公表されることはありません。なお、回答には 10 分少々かかるものと思われます。また、答えにくい点に関しましては答えていただかなくて結構ですので、ご協力をお願いします。

お忙しいところ大変恐れ入りますが、調査の趣旨をご理解いただき、ご協力いただきますようお願い申し上げます。ご不明な点がございましたら、下記までお問い合わせください。

敬具

2010 年 5 月 29 日

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**1. まずは一般的な信頼の度合いについてお尋ねします。あなたは以下の文章にどのくらい同意できますか。該当するものに〇をつけてください.**

| | まったく同意できない | 同意できない | どちらとも言えない | 同意できる | かなり同意できる |
|---|---|---|---|---|---|
| ほとんどの人は基本的に正直である。 | | | | | |
| ほとんどの人は信頼できる。 | | | | | |
| ほとんどの人は基本的に善良で親切である。 | | | | | |
| ほとんどの人は他人を信頼している。 | | | | | |
| 私は、人を信頼する方である。 | | | | | |
| ほとんどの人は、人から信頼された場合、同じようにその相手を信頼する。 | | | | | |

**2. 以下に記された仮想的な状況を想像してください。そして、そのような時にあなたがどのように思われるかについてお答え下さい。**

状況１：津波到着の直前

ある日曜日の午後に和歌山沖で大きな地震が発生しました。岸和田に津波が来る可能性があり、行政からは避難勧告が出されています。あなたは今、仕事や用事のために自宅から離れているため、住んでいる地域の状況がよくわかりません。あなたの家や近所には多くのお年寄りや子供などの「災害時要支援者」がいます。近所の人々は津波の際にとるべき行動を教わっており、避難訓練の経験もありますが、実際に災害を経験した人はほとんどいません。

※「災害時要支援者」とは、65 歳以上の成人と 6 歳以下の子供、災害が発生した場合、安全な場所への避難行動や避難場所での生活において大きな困難が生じ、まわりの人の手助けを必要とする人たちのことをいいます。例えば、移動が困難な人、車いす、補聴器などの補装具を必要とする人、情報を入手したり、発信したりすることが困難な人、急激な状況の変化に対応が困難な人、薬や医療装置が常に必要な人、精神的に不安定になりやすい人のことです。

1) 地域の人々が災害時要支援者の手助けをしながら速やかに避難できる可能性についてどう思いますか？該当するものに○をつけてください。

| おそらく非常に低い | おそらく低い | どちらとも言えない | おそらく高い | おそらく非常に高い |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

2) この地域が、日ごろからあいさつをよく交わしている地域だった場合、上記 1) のようにみんなでうまく避難できる可能性についてどう思いますか？

| おそらく非常に低い | おそらく低い | どちらとも言えない | おそらく高い | おそらく非常に高い |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

3)　この地域が、日ごろからあいさつをよく交わしていて、なおかつ公共の場所を自分たちできれいに掃除・維持できている地域だった場合、上記 1)のようにみんなでうまく避難できる可能性についてどう思いますか？

| おそらく非常に低い | おそらく低い | どちらとも言えない | おそらく高い | おそらく非常に高い |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

4)　この地域が、毎年、多くの人が「だんじり祭」に積極的に参加している地域だった場合、上記 1)のようにみんなでうまく避難できる可能性についてどう思いますか？

| おそらく非常に低い | おそらく低い | どちらとも言えない | おそらく高い | おそらく非常に高い |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

5)　この地域では普段、バスや電車の中で、携帯電話など大声でしゃべっている人が目に付くような場合、上記 1)のようにみんなでうまく避難できる可能性についてどう思いますか？

| おそらく非常に低い | おそらく低い | どちらとも言えない | おそらく高い | おそらく非常に高い |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

6)　この地域では普段、バスや電車の中で、携帯電話など大声でしゃべっている人が目に付くような地域であり、なおかつ政治に無関心で選挙の投票に行かない人が多い地域だった場合、上記 1)のようにみんなでうまく避難できる可能性についてどう思いますか？

| おそらく非常に低い | おそらく低い | どちらともいえない | おそらく高い | おそらく非常に高い |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

状況２：洪水の直後

7月某日、ゲリラ豪雨によって洪水が発生しました。あなたの地域では、ほとんどの人が屋根の上に避難するなどして無事でしたが、家屋についてはほとんどが浸水により壊滅的な被害を受けました。あなたの家も大きな被害を受けましたが、近所のいくつかの家屋は運よく被害が少なかったようです。

7)　あなたは、近所の被害の少なかった人々が、あなたの家の片付けを手伝ってくれることに、どのくらいの期待を寄せることができますか？

| できない | あまりできない | 少しできる | できる | かなりできる |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

8)　近所の人々が日ごろから積極的に地域の防災訓練に参加していれば、上記 7)のように手伝ってくれることをどのくらい期待出来ますか？

| できない | あまりできない | 少しできる | できる | かなりできる |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

9)　近所の人々が日ごろから積極的に地域の防災訓練に参加しており、なおかつ過去に災害で救助ボランティアとして働いた経験がある場合に、上記 7)のように手伝ってくれることをどのくらい期待できますか？

| できない | あまりできない | 少しできる | できる | かなりできる |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

10)　この地域が、毎年、多くの人が「だんじり祭」に積極的に参加している地域だった場合、上記 7)のように手伝ってくれることをどのくらい期待できますか？

| できない | あまりできない | 少しできる | できる | かなりできる |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

11)　この地域の小学校では、些細なことでも学校に対してクレームを言う親（モンスターペアレンツ）が多いことが知られているとします。この場合、上記 7)のように手伝ってくれることをどのくらい期待できますか？

| できない | あまりできない | 少しできる | できる | かなりできる |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

12)　この地域の小学校では、些細なことでも学校に対してクレームを言う親（モンスターペアレンツ）が多いことが知られているとします。さらにこの地域では、買い物等のちょっとした時間に傘や自転車が盗まれてしまうという苦情が多数警察に寄せられているとします。この場合、上記 7)のように手伝ってくれることをどのくらい期待できますか？

| できない | あまりできない | 少しできる | できる | かなりできる |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

**３．最後にあなた自身について少しおたずねします。差し支えのない範囲でお答え下さい。**

１）あなたの年齢や性別、家族構成についてお聞きします。

（ア）年齢

| | | |
|---|---|---|
| **1.** 20 歳未満 | **2.** 20 歳以上~30 歳未満 | **3.** 30 歳以上~50 歳未満 |
| **4.** 50 歳以上~60 歳未満 | **5.** 60 歳以上~69 歳未満 | **6.** 70 歳以上 |

（イ）性別

| | |
|---|---|
| **1.** 男性 | **2.** 女性 |

（ウ）世帯人数　　あなたをふくめて（　　）人

（エ）あなたの世帯には災害時要支援者がいますか。

| | |
|---|---|
| **1.** いる、_____人 | **2.** いない |

＊「災害時要支援者」とは、65 歳以上の成人と 6 歳以下の子供、災害が発生した場合、安全な場所への避難行動や避難場所での生活において大きな困難が生じ、まわりの人の手助けを必要とする人たちのことをいいます。例えば、移動が困難な人、車いす、補聴器などの補装具を必要とする人、情報を入手したり、発信したりすることが困難な人、急激な状況の変化に対応が困難な人、薬や医療装置が常に必要な人、精神的に不安定になりやすい人のことです。

（オ）あなたは岸和田市に住んでどれくらいになりますか。

| | | |
|---|---|---|
| **1.** 1 年未満 | **2.** 1 年~5 年 | **3.** 5 年~10 年 |
| **4.** 10 年~15 年 | **5.** 15 年~20 年 | **6.** 20 年以上 |

2）あなたの最終学歴，職業について差し支えのない範囲でお答え下さい。

（ア）最終学歴

| | | |
|---|---|---|
| **1.** 中学校 | **2.** 高校 | **3.** 専門学校・短大 |
| **4.** 大学・大学院 | **5.** その他 | |

（イ）職業

| | | |
|---|---|---|
| **1.** 会社員・役員 | **2.** 公務員・教職員 | **3.** 自営業 |
| **4.** 農林漁業 | **5.** 主婦 | **6.** パート・アルバイト |
| **7.** 無職 | **8.** 年金受給者 | **9.** 学生 |
| **10.** その他( | | ) |

3）だんじり祭にはどのくらいの頻度で参加していますか。

| | | |
|---|---|---|
| **1.** 毎年 | **2.** 2～3 年に一度 | **3.**ごくまれに |
| **4.** 全く参加していない | **5.** その他 | |

質問は以上です。

ご協力ありがとうございました！！